

DeluxScan 17

17" COLOR MONITOR

MODEL : HL-7864

TECHNICAL SERVICE MANUAL

CONTENTS

SAFETY PRECAUTION-----	1
X-RAY RADIATION PRECAUTION-----	3
SPECIFICATION-----	4
GENERAL INFORMATION-----	5
CONTROL DESCRIPTION-----	6
VIDEO INPUT SIGNAL-----	7
VIDEO INPUT TERMINAL-----	12
CONNECTING WITH EXTERNAL EQUIPMENT-----	13
THEORY OF OPERATION-----	14
TROUBLE SHOOTING-----	16
ADJUSTMENT METHOD-----	21
BLOCK DIAGRAM-----	29
SCHEMATIC DIAGRAM-----	31
PARTS LIST-----	33
PCB LAYOUT-----	35
WAVE FORMS-----	37
EXPLODED VIEW AND SWIVEL-----	39

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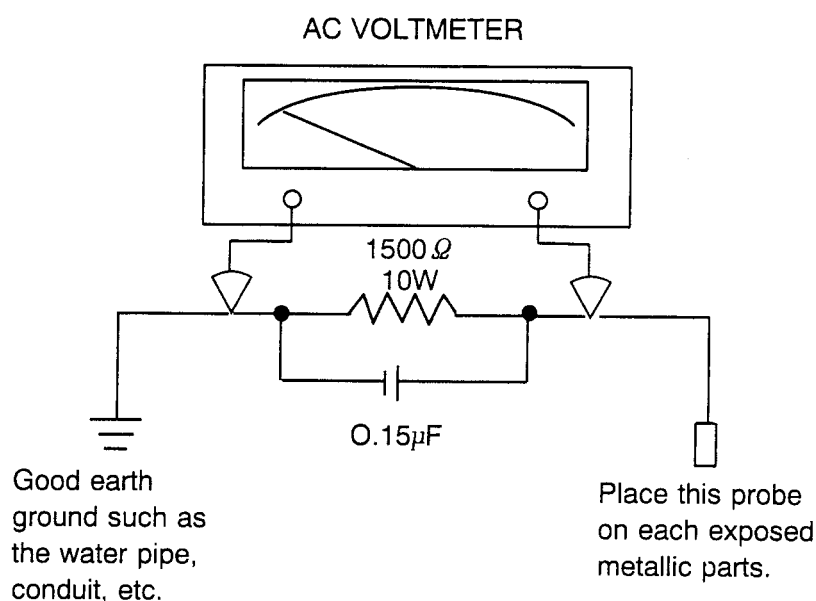
SAFETY PRECAUTION

WARNING

Service should not be attempted by anyone who is unfamiliar with the necessary precautions on this monitor. The following are the necessary precautions to be observed before servicing.

1. Always discharge the high voltage anode of the picture tube completely before handling the picture tube. The picture tube is high vacuum state and if broken, glass fragments will be exploded violently. Use shatterproof goggles and keep picture tube away from the bare baby while handling.
2. When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as non-metallic control knobs, insulating covers, shields, isolation resistor-capacitor network etc.
3. Before returning the monitor to the customer, always perform an AC leakage current check on the exposed metallic parts of the cabinet, such as signal connectors, terminals, screw heads, metal overlays, control shafts etc, to be sure the monitor is safe to operate without danger of electrical shock. Plug the AC line cord directly into a AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1500 ohm per volt or more sensitivity in the following manner: Connect ground (water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the AC Voltage, using two clips leads, connect 1.5 kohm, 10 Watt resistor paralleled by a 0.15 μ F capacitor in series. (See Figure 1.)

Reverse the AC plug at the AC outlet and repeat AC voltage measurements for each exposed metallic part. measured voltage must not exceed 0.3 volts RMS. This corresponds to 0.2 milliamp AC. Any value exceeded this limit constitutes a potential shock hazard and must be corrected immediately.



<Figure 1. Leakage Current Test Circuit>

INSTRUCTIONS TO USER

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been tested and found to comply with the limits for the specifications in Subparts J of Part 15 FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is not guarantee that interference will not occur in a particular installation.

If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.

- * reorient the receiving antenna
- * relocate the computer with respect to the receiver
- * plug the computer into a different outlet so that computer and receiver are on different branch circuits.

X-RAY RADIATION PRECAUTION

1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must be above the specified limit. The nominal value of the high voltage of this machine is $26.0KV \pm 1KV$ at zero beam current (minimum brightness) under a 120V AC power source. The high voltage must not (under any circumstances) exceed 29.0KV. Each time a monitor requires servicing, the high voltage should be checked following the high voltage check procedure on this manual. It is recommended the reading of the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.
2. This monitor is equipped with a protection circuit which prevents the monitor from producing an excessively high voltage even if the B+ voltage increases abnormally. Each time the monitor is serviced, the protection circuit must be checked to determine that the circuit is properly functioning, following the protection circuit check procedure in this manual.
3. The only source of X-RAY RADIATION in this machine is the picture-tube.
For continued X-RAY RADIATION protection, the replacement tube must be exactly the same type tube as specified in the parts list.
4. Some parts in this monitor have special safety-related characteristics for X-RAY RADIATION protection.
For continued safety, parts replacement should be undertaken only after referring to the product safety notice.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this monitor have special safety-related characteristics. These characteristics are often not evident from visual inspection and the protection afforded by them can not be obtained necessarily by using replacements rated for higher voltage, wattages, etc.

Replacement parts which have these special safety characteristics are identified in this manual ; electrical components having such features identified in this manual ; electrical components having such features identified by "!" and in the replacement parts list and schematic diagram.

For continued protection, replacement parts must be identical to those used in the original circuit. The use of substitute replacement parts which does not have the same safety characteristics as the factory recommended replacement parts shown in this service manual, may create shock, fire, X-RAY RADIATION or other hazards.

SPECIFICATION

Items		HL-7864
CRT	Size	17", Diagonal, Flat
	Dot Pitch	0.28mm or 0.27mm
	Type	Non-Glare, Anti-Static, Anti-Reflection
Input	Signal	R.G.B. Analog 0.7Vp-p positive at 75 Ω Terminated
	Connector	15Pin, D-Sub Type
SYNC	H/F	28-66KHz(Automatic)
	V/F	45-130Hz(Automatic)
Video Bandwidth		100MHz(-3dB)
Display	Area(H $\times$ V)	300 $\times$ 225mm(Max. Overscan)
	Color	Infinite
Resolution(H $\times$ V)		Max 1280 $\times$ 1024(64KHz/60Hz)
User Controls		Power Switch, Brightness, Contrast, H/V Size, H-phase, V-Position, Pincushion, RECALL, Degaussing
Power Management		As per VESA Standard, Lower than EPA recommended
Compatibility		VGA, S-VGA, 8514/A, XGA, EVGA
Power Source		100-240 VAC(Universal Power) 1.8A Max 140W
Safety & Regulation	MPR II	Basic
	EMI	FCC B, FTZ, CISPR
	Safety	UL, CSA, TUV-GS, ISO-9241-3, DHHS, PTB N.S.D.FI
Temperature	Operating	5 to 35 Degree Celsius
	Storage	-30 to 60 Degree Celsius
Humidity		Operating :35% to 80% Storage :30% to 85%
Weight		Unit:20kg Carton:22kg
Dimension(W $\times$ H $\times$ Dmm)		409 $\times$ 423.6 $\times$ 474.5mm

GENERAL INFORMATION

1. Description

This 17" color display monitor is operated in R, G, B, drive MODE input.

2. Operating instructions

2-1. External instructions

2-1-1. Front

Power Switch, Brightness, Contrast, H-phase, H-SIZE, V-POS, V-SIZE, Pin, RECALL, DEGAUSS, Function LED, Power & DPMS LED.

2-1-2. Rear

Input connection (AC, SIGNAL CABLE)

2-2. Service Instruction(internal controls)

H-Linearity, Focus, Screen, H-Center, High Voltage, B⁺

3. Electrical

3-1. 100-240 Volt 60Hz, 50Hz for use all over the world.

This power supply is a 140 Watts multi output SMPS for monitor.

3-2. Video

Input : 0.7V p-p Analog signal(at 75 OHM TERMINATED)

Band width : 100MHz(-3dB)

Polarity : Positive

3-3. Separate H/V Sync

3-3-1. Horizontal Drive

Level : TTL High : 2.4V min

Low : 0.4V max

Polarity : Negative or Positive

Frequency : 28KHz~66KHz

3-3-2. Vertical Drive

Level : TTL High : 2.4V min

Low : 0.4V max

Polarity : Negative or Positive

Frequency : 45Hz~130Hz

3-4. Composite Sync

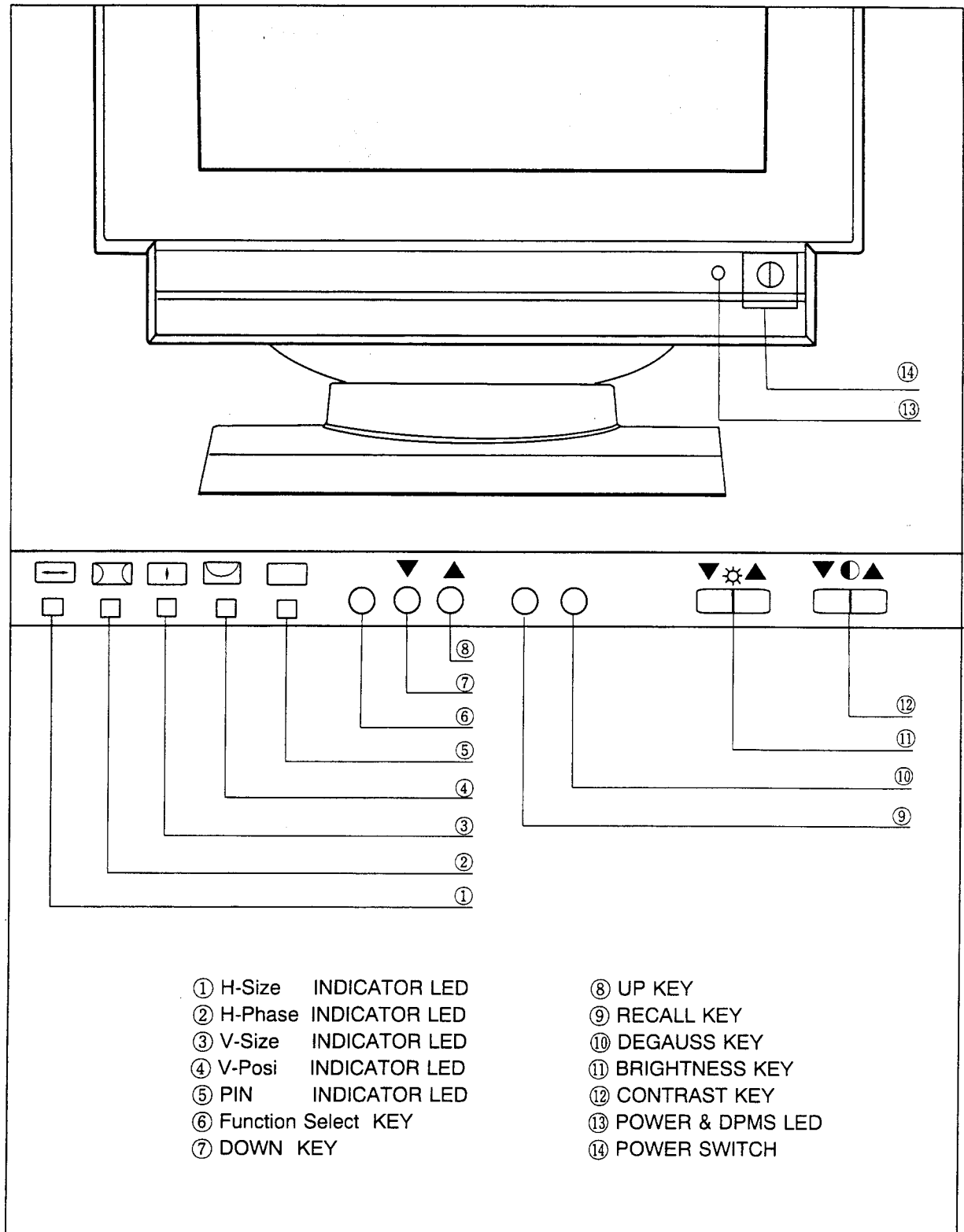
Level : TTL High : 2.4V min

Low : 0.4V max

Polarity : Negative or Positive

3-5. MAC- II Compatible

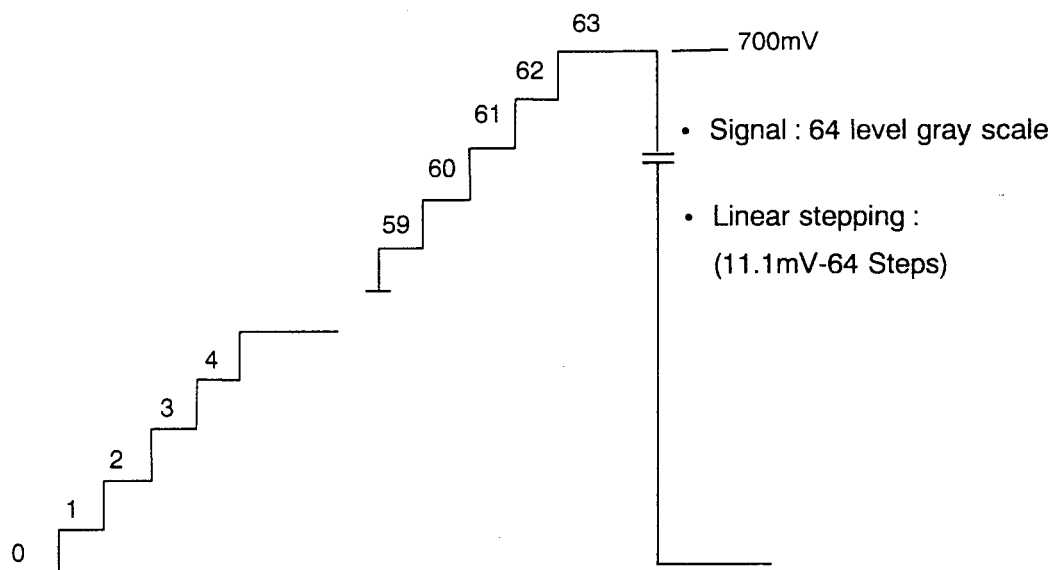
CONTROL DESCRIPTION



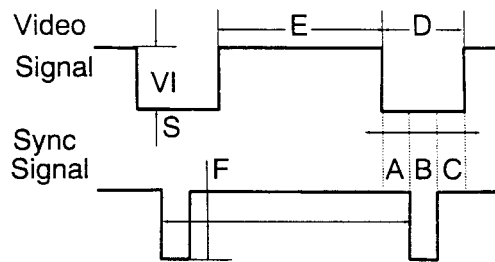
VIDEO INPUT SIGNAL

Recommended signals are shown below.

- **Signal level**
Video Level : 0 to 700mV
Polarity : Positive
Video input : RGB separated
Analog level
Sync input : H-sync ; TTL level
V-sync ; TTL level
- **Wave from**
Video input(R, G, B)



A : Front Porch
 B : Sync Period
 C : Back Porch
 D : Blanking Period
 E : Display Period
 F : Total Cycle
 S : Sync Signal Level
 VI: Video Signal Level



Sync pulses, both for Horizontal and Vertical signals, have positive or negative (as shown here) Polarity combination to encode different modes.

640 Dot × 350 Line Mode(VGA1)

	Unit	A	B	C	D	E	F
H	us	0.940	3.770	1.890	6.600	25.170	31.778
V	ms	1.200	0.064	1.880	3.144	11.126	14.270

Frequencies : $f_d/25.175\text{MHz}$, $f_H/31.469\text{KHz}$, $f_V/70.080\text{Hz}$

Interlace : Non

Sync Polarity : H/Positive, V/Negative

Video Signal Level : 0.7Vp-p. 75ohm

720 Dot × 400 Line Mode(VGA2)

	Unit	A	B	C	D	E	F
H	us	0.947	3.770	1.890	6.600	25.170	31.778
V	ms	0.410	0.064	1.080	1.554	12.716	14.270

Frequencies : $f_d/28.322\text{MHz}$, $f_H/31.469\text{KHz}$, $f_V/70.080\text{Hz}$

Interlace : Non

Sync Polarity : H/Negative, V/Positive

Video Signal Level : 0.7Vp-p. 75ohm

640 Dot×480 Line Mode(VGA3)

	Unit	A	B	C	D	E	F
H	us	0.940	3.370	1.890	6.600	25.170	31.778
V	ms	0.350	0.064	1.020	1.434	15.246	16.680

Frequencies : fd/25.175MHz, fH/31.469KHz, fV/59.940Hz

Interlace : Non

Sync Polarity : H/negative, V/Negative

Video Signal Level : 0.7Vp-p. 75ohm

1024 Dot×768 Line Mode(8514/A & XGA)

	Unit	A	B	C	D	E	F
H	us	0.178	3.910	1.250	5.338	22.760	28.100
V	ms	0.014	0.113	0.563	0.690	10.810	11.500

Frequencies : fd/44.912MHz, fH/35.587KHz, fV/87.000Hz

Interlace

Sync Polarity : H/Positive, V/Positive

Video Signal Level : 0.7Vp-p. 75ohm

640 Dot×480 Line Mode(VGA/72Hz)

	Unit	A	B	C	D	E	F
H	us	0.875	1.250	4.375	6.500	20.000	26.413
V	ms	0.239	0.080	0.822	1.141	12.720	13.859

Frequencies : fd/31.500MHz, fH/37.860KHz, fV/72.153Hz

Interlace : Non

Sync Polarity : H/Negative, V/Negative

Video Signal Level : 0.7Vp-p. 75ohm

800 Dot×600 Line Mode(SVGA/56Hz)

	Unit	A	B	C	D	E	F
H	us	0.667	2.000	3.560	6.227	22.220	28.444
V	ms	0.030	0.060	0.600	0.690	17.070	17.780

Frequencies : fd/36.000MHz, fH/35.156KHz, fV/56.250Hz

Interlace : Non

Sync Polarity : H/Posi/Nega, V/Posi/Nega

Video Signal Level : 0.7Vp-p. 75ohm

1024 Dot×768 Line Mode(EVGA/60Hz)

	Unit	A	B	C	D	E	F
H	us	0.750	1.000	2.957	4.707	15.950	20.675
V	ms	0.022	0.080	0.540	0.642	15.880	16.520

Frequencies : fd/60.000MHz, fH/48.363, fV/60.500Hz

Interlace : Non

Sync Polarity : H/Negative, V/Negative

Video Signal Level : 0.7Vp-p. 75ohm

800 Dot×600 Line Mode(SVGA/72Hz)

	Unit	A	B	C	D	E	F
H	us	1.120	2.400	1.280	4.800	16.000	20.800
V	ms	0.770	0.125	0.478	1.373	12.480	13.853

Frequencies : fd/50.000MHz, fH/48.077KHz, fV/72.181Hz

Interlace : Non

Sync Polarity : H/Positive, V/Positive

Video Signal Level : 0.7Vp-p. 75ohm

1024 Dot×768 Line Mode(EVGA/70Hz)

	Unit	A	B	C	D	E	F
H	us	0.320	1.813	1.920	4.053	13.653	17.707
V	ms	0.053	0.106	0.513	0.672	13.599	14.272

Frequencies : fd/70.000MHz, fH/56.476KHz, fV/70.069Hz

Interlace : Non

Sync Polarity : H/Negative, V/Negative

Video Signal Level : 0.7Vp-p. 75ohm

800 Dot×600 Line Mode(EVGA/60Hz)

	Unit	A	B	C	D	E	F
H	us	1.000	3.200	2.200	6.400	20.000	26.400
V	ms	0.026	0.106	0.607	0.739	15.840	16.579

Frequencies : fd/36.000MHz, fH/37.879KHz, fV/60.310Hz

Interlace : Non

Sync Polarity : H/Positive, V/Positive

Video Signal Level : 0.7Vp-p. 75ohm

1280 Dot×1024 Line Mode

	Unit	A	B	C	D	E	F
H	us	0.750	1.000	2.000	3.750	11.875	15.620
V	ms	0.020	0.080	0.580	0.680	16.000	16.670

Frequencies : fd/85MHz, fH/64.000KHz, fV/60.100Hz

Interlace : Non

Sync Polarity : H/Posi/Nega, V/Posi/Nega

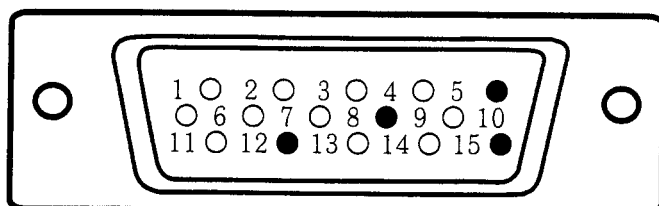
Video Signal Level : 0.7Vp-p. 75ohm

VIDEO INPUT TERMINAL

A 15 pin D-sub connector is used as the input signal connector.
Pin and input signals are shown in the table below.

Pin Description

SIGNAL PIN NO.	SEPERATE SYNC	COMPOSITE SYNC
1	RED	RED
2	GREEN	GREEN
3	BLUE	BLUE
4	-	-
5	-	-
6	RED GROUND	RED GROUND
7	GREEN GROUND	GREEN GROUND
8	BLUE GROUND	BLUE GROUND
9	-	-
10	GROUND	GROUND
11	GROUND	GROUND
12	-	-
13	H-SYNC	COMPOSITE SYNC
14	V-SYNC	-
15	-	-

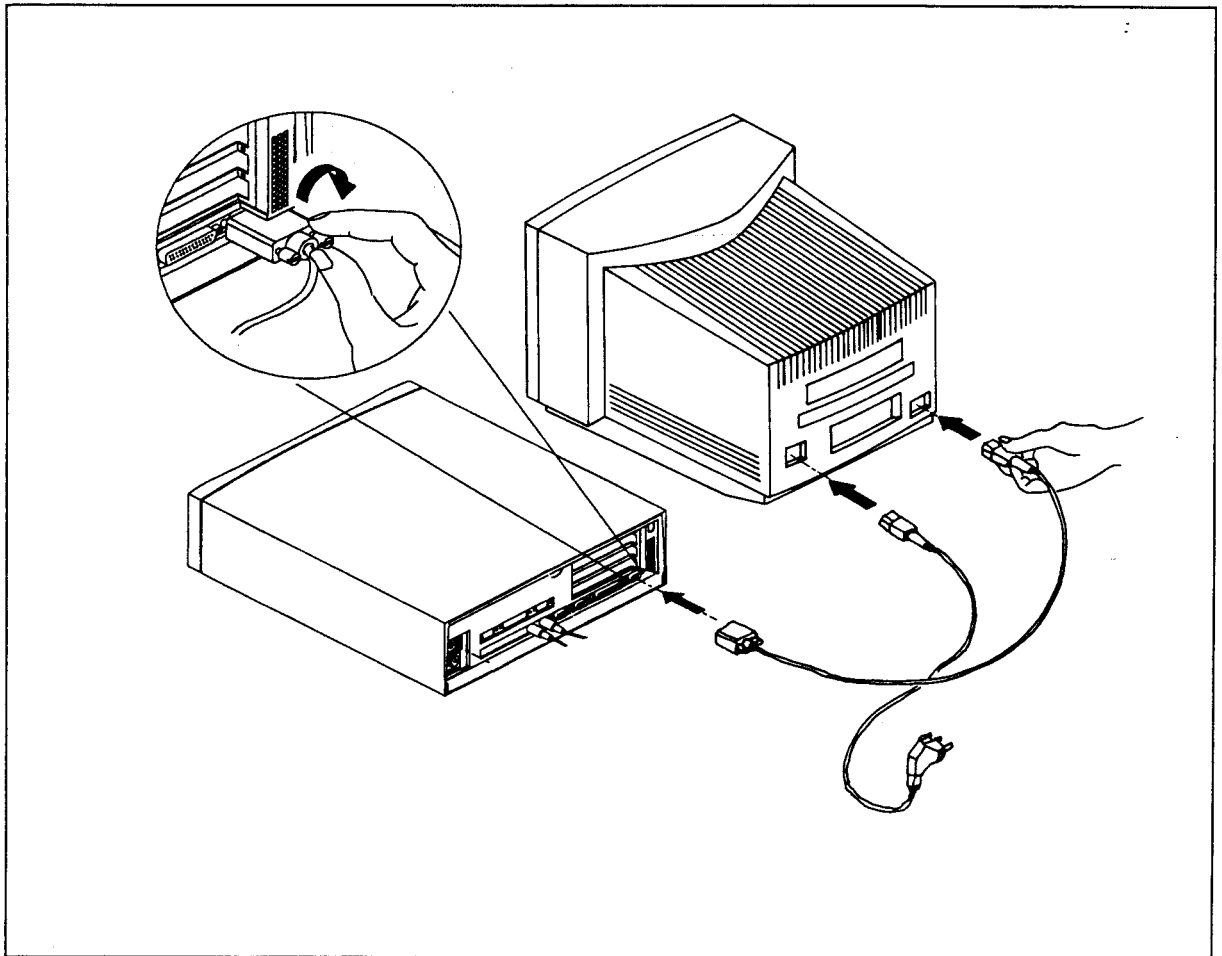


D-Sub miniature connector

CONNECTING WITH EXTERNAL EQUIPMENT

Cautions

Be sure to turn off the power of your computer before connecting the monitor.



THEORY OF OPERATION

1. Power Supply

The SMPS is a current mode controlled PWM flyback converter. The AC line voltage range is from 90V to 264V. The SMPS has +6.3V, +8V, +16V, +27V, +70V and +200V outputs. The conducted noise is filtered by X and Y capacitors and a common mode line filter.

The input rectifier section (BD101) converts the AC line voltage into DC voltage to power the SMPS. UA3842(U103) is an integrated current mode PWM.

It consists of an oscillator, error amplifier, current sense comparator, under voltage lock-out and an output MOSFET driver stage. The switching frequency is locked to horizontal scan frequency by a pulse transformer(T102).

The power supply has two parts of main and co-power supply. The main power supply works in normal mode and co-power supply in DPMS mode (OFF state). A standard ringing choke converter(T103) is used as co-power supply.

When the MCU detects OFF mode, Pin 23 is changed to HIGH. It turns Q104 on, AS U103 pin1 is changed to Low so Q105 is turned off. At last the main power supply do not operate. U102 is always active because rectified current is continuously supplied by D120, C157. So the co-power supply delivers energy for MCU and sync processing circuit during OFF mode. The total power consumption must be less than 8 watts in Off mode. The DPMS function contains another mode, SUSPEND.

When the MCU detects SUSPEND mode, pin 22 is changed to LOW. Then Q108, Q109 are turned off. So 27V, 16V lines are not active.

2. Signal Processing and MCU Control

U605, a XOR TTL gate is used for sync signal and polarity buffer. The sync polarity is used to detect VGA mode.

The positive H-sync is input to U603 a frequency divider. V-sync and divided H-sync are input to MCU. MCU can measure the H and V frequency to detect the video mode. MCU has digital to analog converter control functions like V-posi, parallelogram.

And the external DAC(U602) is used for other controls like, R/G/B cut-off, R/B drive, brightness, conternal, pincushion, H/V size, H-phase. Three parallel ports are used to set the size of flyback capacitor and correction capacitor.

3. Horizontal Deflection

Horizontal parts consist of PWM controller, PLL IC and S correction circuits.

PWM controller(U305) supplies signal T301 taking feedback by T303 to operate the yoke of Horizontal, normally.

A Phase-Lock Loop IC (MC14046) synchronizes the horizontal switch to the timing pulses from the computer. Incoming horizontal sync is level translated by U502.

It is fed into the horizontal comparator, and internal oscillator is automatically locked.

PLL output pulse at pin4 of U501 is supplied to the base of Q503 and it drives FET Q303. When the drive FET Q303 is turned on, the H-output TR conducts current through the deflection yoke on the right side of the screen. This current comes from the S correction capacitors, which are charged equally to the effective supply voltage.

When the drive FET is turned off. The damper diode(D310) allows current for left side of

the screen to flow back through the deflection yoke to the S correction capacitors. The flyback capacitors(C308, C309, C387) determine the size and length of the flyback pulse, three FETs(Q305, Q306, Q307) selects the value of S capacitors. H-centering is controlled by a switch SW301. The switch selects DC offset current flowing through the yoke.

4. Vertical Deflection

TDA 1675 incorporates all the necessary function for providing the yoke of a monitor with the current required for vertical deflection. internal clock is generated by means of charge or discharge of R205 and C201. This clock controls output of the Ramp generator in order to make continuous ramp pulse. Ramp pulse is applied to the internal Amplifier. The internal Amplifier output (TDA1675 pin#1) drives the yoke of Vertical.

5. X-ray Protection and Beam Current Limiting.

At normal condition, U303 output is high, Q103 is turned off on. Therefore thermhige voltage and deflection deive circuits keep active condition because of suppling 16V(voltage) to each drive' stage. At normal condition, When the voltage of the FBT(Flyback transformer) eises to unacceptable level. U303 to turned on. So 16V flows through Q310 to the ground. It causes that Q309 is turned off. Then the high voltage is shut down until the power switch is pressed.

6. Video Amplifier

LM1205 is a wide band video amplifier with three matched video amplifiers, contrast control, brightness control, drive and cut-off controls, blanking gate and clamp gate. H and V blank signal is applied to pin13. During blanking all three outputs are thrown to the pedestal level, A one shot multivibrator (U604) is used to generate a back-porch clamp signal. This signal is applied to pin 14.

The output stage is made of discrete power amplitier. The output capable of 40 volts swing in less than 5n Sec. To get good video response, emmitter followers and peaking components are used.

The three cathodes are AC coupled to the video amplifiers. The DC level on each cathode is set by a cut-off amplifier and clmap diode. The value of the DC voltage is adjusted by DACs.

7. High Voltage

High voltage circuit is operated independent of horizontal deflection circuit and it is automatically controlled by PWM IC (DL494) The output signal of MC14046 drives FET (Q313) and supply pulses to FBT through Q311 So that the FBT makes a high voltage.

In order to keep the high voltage constantly, it is fed back to DL494(PWM controller IC). If high voltage incense more than referance voltage, the output pulsewidth of DL494 will be narrow. So the turn on time of Q315 will be short.

On the contrary if high voltage derease less than referance voltage, the output pulsewidth of DL494 will be wide so the turn on time of Q315 will be long.

TROUBLE SHOOTING

1. Precaution for troubleshooting

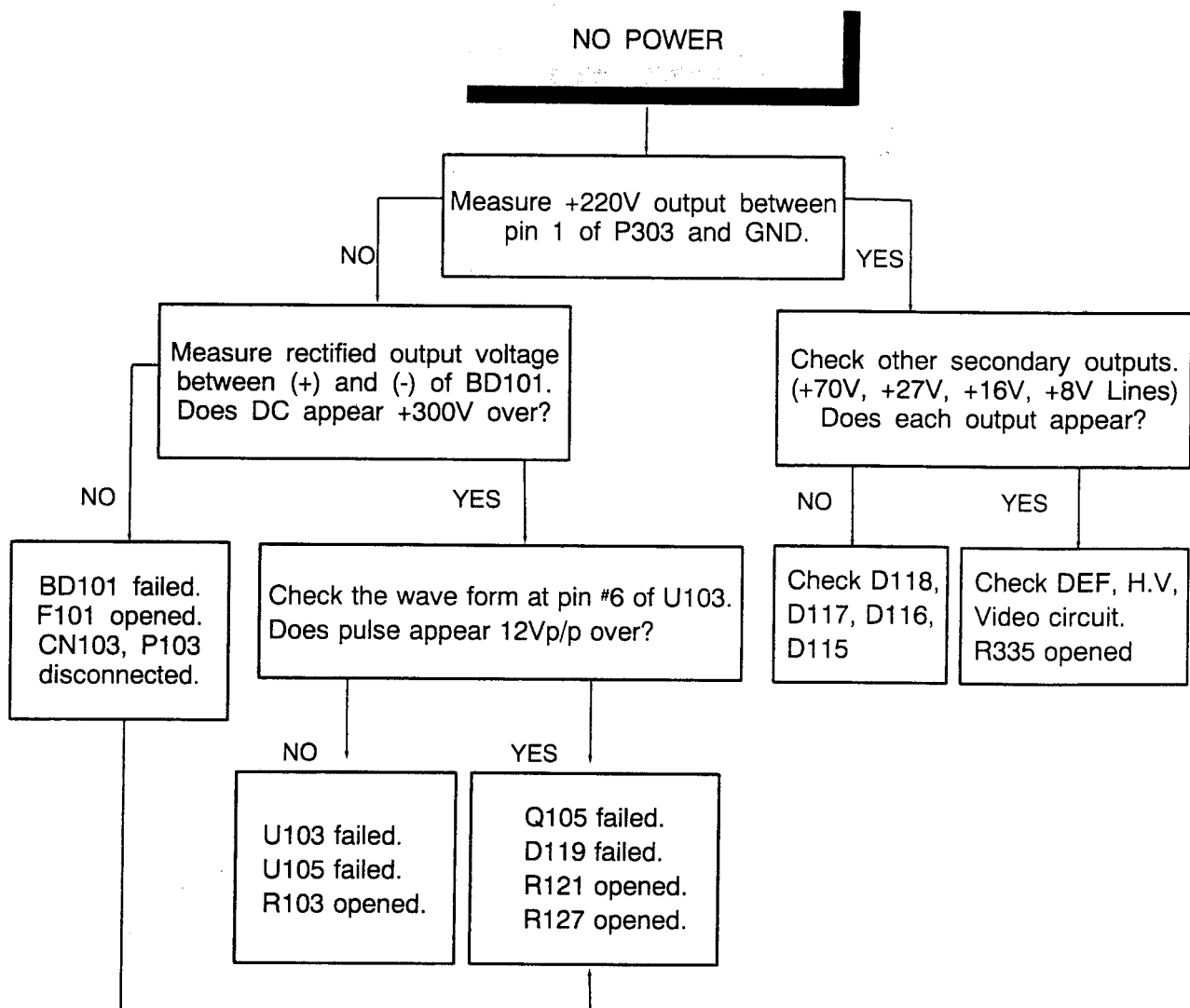
When you troubleshoot this monitor, some precaution should be observed.

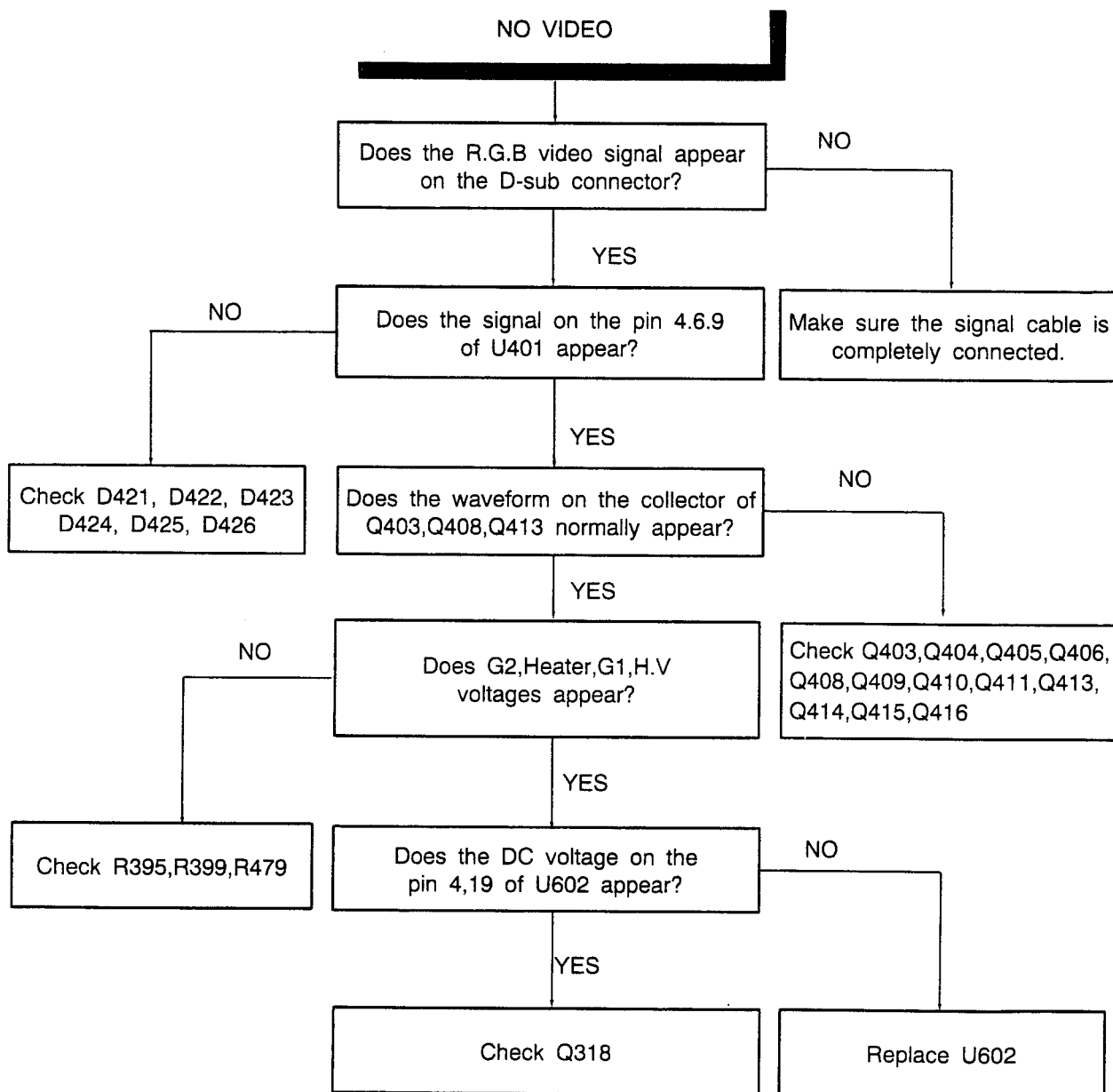
Use a high quality isolation transformer capable of providing 3 Amperes or more. Never connect primary ground and secondary ground together including isolation transformer.

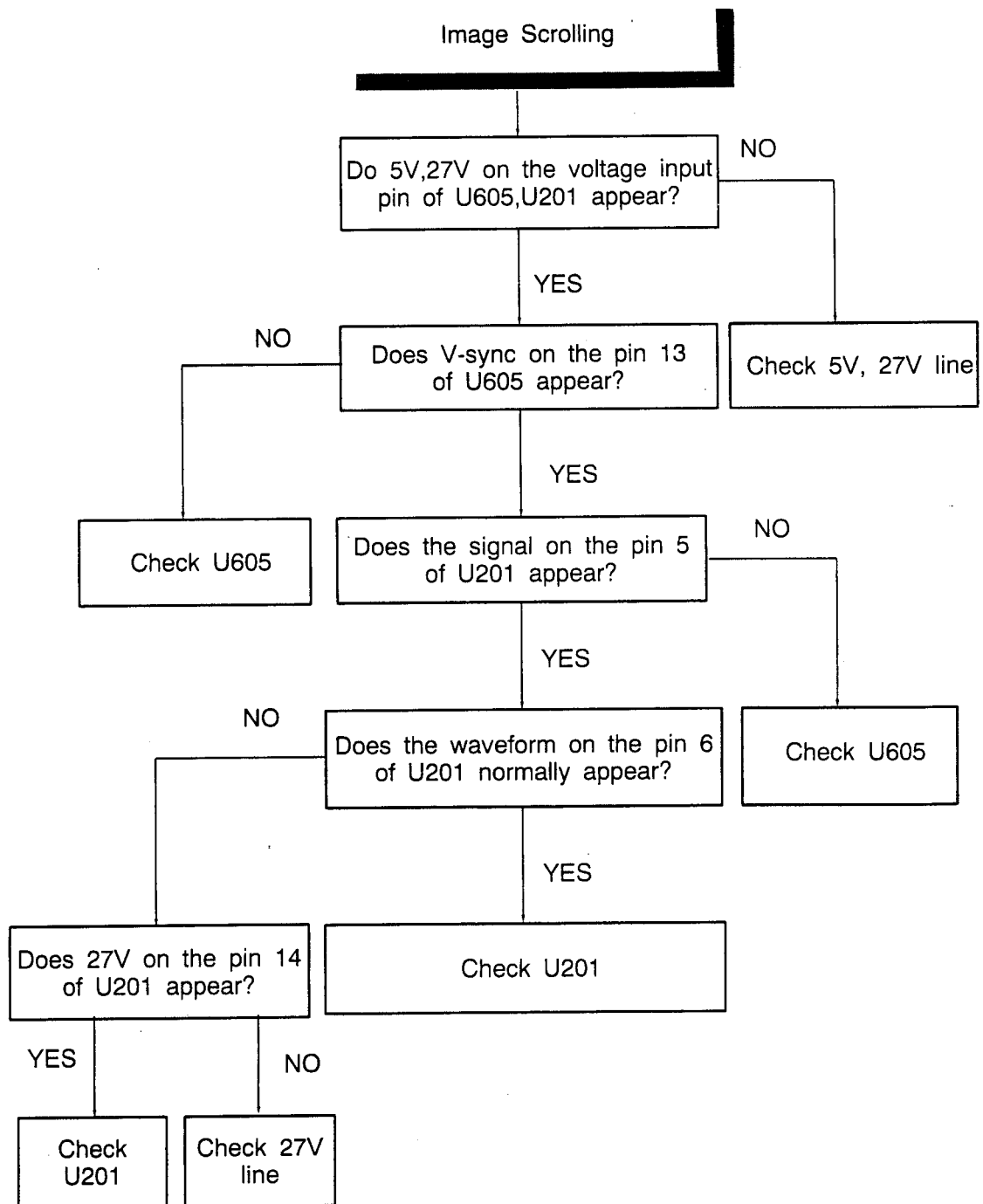
Measure high voltage with respect to chassing ground only and with a high impedance probe of 1000 mega ohm or higher and rated for 30KV DC or higher.

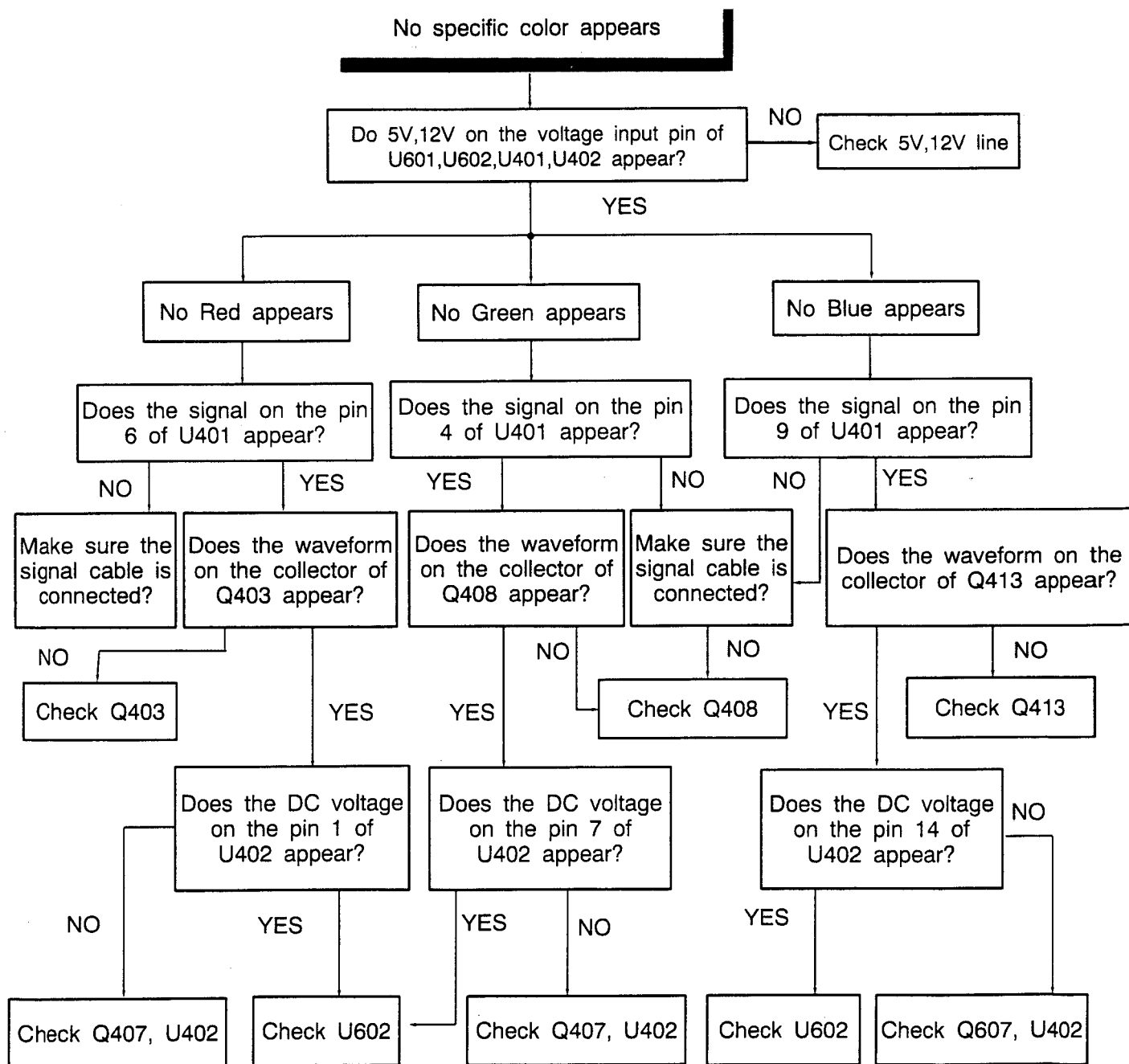
Measure Q304, Q311 collector pulse with a high quality 100:1 probe rated for 1500 volts or higher.

2. Trouble shooting procedure

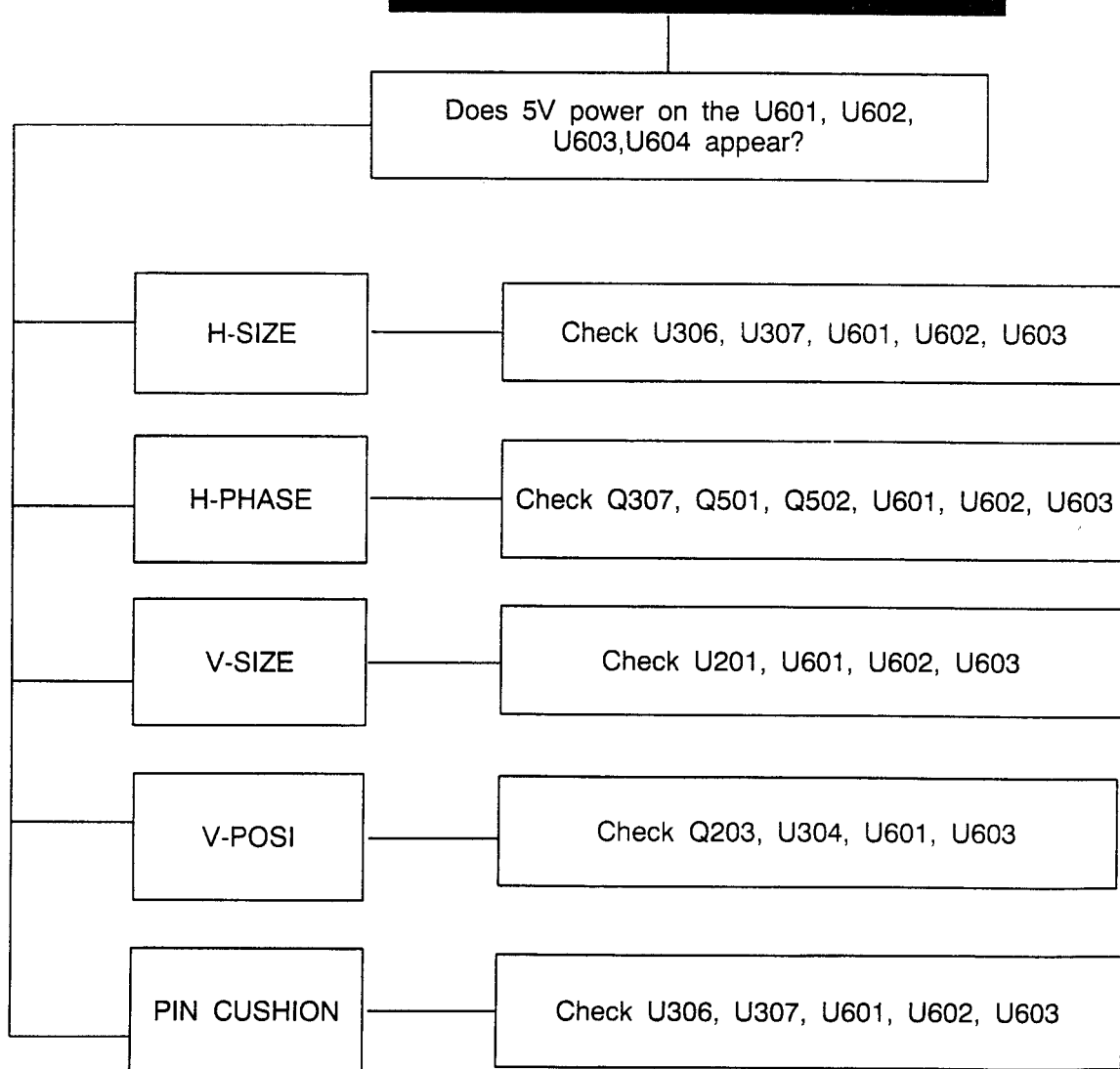








External control switches are not operated



ADJUSTMENT METHOD

1. Caution

Extremely high voltages are present in the area around the FBT(T308) and the anode high voltage lead. Do not touch Q105 or its heatsink as high voltage is present on these components.

2. Equipment Required

Alignment Templet

Video/Signal Source : Video Signal Generator

Digital Voltmeter

Color Analyzer or equivalent

High Voltage Meter : up to 30KV

3. Before Adjustment

Verify that the video output level is 0.7Vpp at 75 ohm termination and the video timings are same as standard timing given in specification.

Place the AC power switch to the ON position. Allow the monitor to stabilize thermally for 15 minutes at least before any adjustment about the image parameters. The electron optics of the CRT and electronic system require time to stabilize.

4. Adjustment Procedure

4-1 B+ Voltage Setting

- Video signal : cross hatch pattern in VGA Mode
- Measuring point : Jumper J125 (use D. V. M)
- Adjustment : VR101 (Power board)
- Limits : $202V \pm 1.0V$

4-2 High Voltage Setting

- Video signal : cross hatch pattern in VGA Mode
- Set the brightness and contrast controls to the minimum position.
- Measuring point : Between chassis and anode cap.(Use H.V meter)
- Adjustment : VR301, main board
- Limits : $26.0KV \pm 0.3KV$

4-3 Screen Voltage Setting

- Video signal : VGA Mode Black
- Set the brightness and contrast controls to the minimum position.
- Measuring point : Between chassis and G2 on the CRT board(Use H.V meter)
- Adjustment : Screen VR, lower VR of FBT
- Limits : $540V \pm 10V$

4-4 H-RASTER Presetting

- Video signal : cross hatch pattern in 64KHz, 1280 × 1024 mode
- Adjustment : SW301, main board
- Limits : Match Both sides of the image to the front bezel.

4-5 Image Geometry Setting

- Connect the pin 4 and 5 of P602.(Geometry Setting function)
- Video signal : cross hatch pattern in each mode
- Adjust the Geometries using the user controls.

4-5-1 H-Phase

- Adjustment : Use up, down key after setting the H-Phase INDICATOR LED lighting up as using the Function Select KEY.
- Limits : Refer Display centering in figure 2.

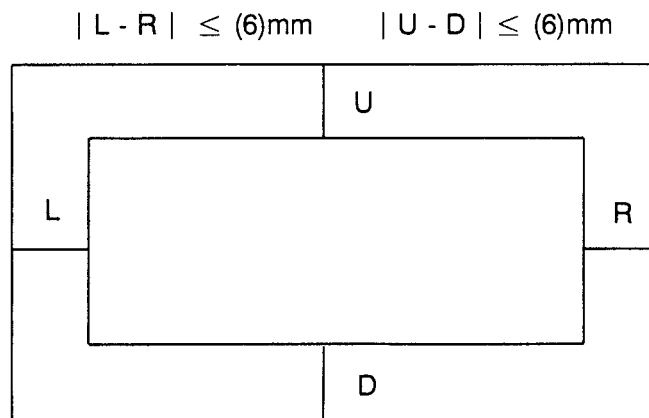
4-5-2 V-Position

- Adjustment : Use up, down key after setting the H-Position INDICATOR LED lighting up as using the Function Select KEY.
- Limits : Refer Display centering in figure 2.

Display Centering

Figure 2 describes the pattern for this test. Basically it is composed of a single pixel white line around the perimeter of the data area, with marks for the horizontal and vertical axes. The background is black.

The display centering shall be met as following specification at adjusted centering function (User's control)



< Fig 2. - Display Centering >

4-5-3 H, V-Size

- Adjustment : Use up, down key after setting the H-Size or V-Size INDICATOR LED lighting up as using the Function Select KEY.
- Limits : H-Size : $300\text{mm} \pm 5.0\text{mm}$
V-Size : $225\text{mm} \pm 5.0\text{mm}$

4-5-4 Pincushion

- Adjustment : Use up, down key after setting the Pin INDICATOR LED lighting up as using the Function Select KEY.
- Limits : Refer Geometric Distortion in figure 3.

4-5-5 Trapezoid

- Adjustment : Use up, down key after setting the H-Size and H-Phase INDICATOR LED lighting up as using the Function Select KEY.
- Limits : Refer Geometric Distortion in figure 3.

4-5-6 Diagonal

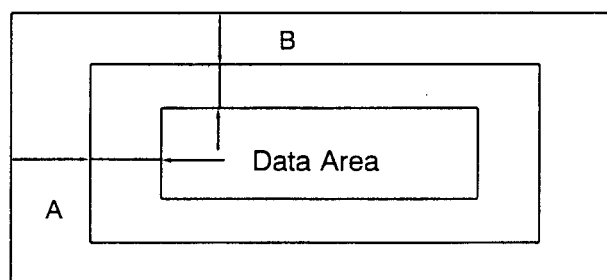
- Adjustment : Use up, down key after setting the H-Phase and V-Size INDICATOR LED lighting up as using the Function Select KEY.
- Limits : Refer Geometric Distortion in figure 3.

Geometric Distortion

It is acceptable that pincushion, trapezoid, parallelogram, barrel distortions, out of orthogonality and various waves can appear all together, if the data area parameter remains within the limits of tolerance as per figure where:

$$A = B \leq (2.5)\text{mm}$$

The tolerance frame sides are parallel to the window of enclosure axes



< Fig 3. Geometric Distortion >

4-6 H-Linearity setting

- Video signal : cross hatch pattern
- Adjustment : L302 at 64KHz Mode, L303 at 35KHz Mode
- Limits : Refer Linearity in figure 4.

Linearity

The linearity of an image displayed on the CRT must meet the following requirements, with reference to figure 4 for both X and Y axis.

$$\frac{\text{Max} - \text{Min}}{\text{Max} + \text{Min}} \times 100$$

Horizontal : (7)% (Max)

Vertical : (7)% (Max)

	X1	X2	X3	X4	X5	X6	X7	X8	X9	Xn
Y1										
Y2										
Y3										
Y4										
Y5										
Y6										
Y7										
Y8										
Y9										
Yn										

< Fig 4. - Linearity >

Where : $X1=X2=.....=Xn$

$Y1=Y2=.....=Yn$

4-7 White balance

- Connect the pin 4, 5 and 6 of P602.(White Balance setting)

4-7-1 Cut-off settings

- Video signal : Black pattern in 64KHz.
- Set the brightness control to $0.5 \text{ F/L} \pm 0.2 \text{ F/L}$
- Adjust the Cut-off using the R, G, B cut-off controls

R cut-off : H-Size INDICATOR LED
G cut-off : H-Phase INDICATOR LED
B cut-off : V-Size INDICATOR LED

- Limit : $X=0.281 \pm 0.01$, $Y=0.311 \pm 0.01$

4-7-2 Drive setting

- Video signal : Light White pattern in 64KHz.
- Set the Brighness control to minimum, Contrast to $6.0 \text{ F/L} \pm 1.0 \text{ F/L}$
- Adjust the White balance using the R, B drive controls.
 - [R drive : V-Posi ZNDICATOR LED]
 - [B drive : Pin ZNDICATOR LED]
- Limit : $X=0.281 \pm 0.01$, $Y=0.311 \pm 0.01$

4-7-3 Brightness setting

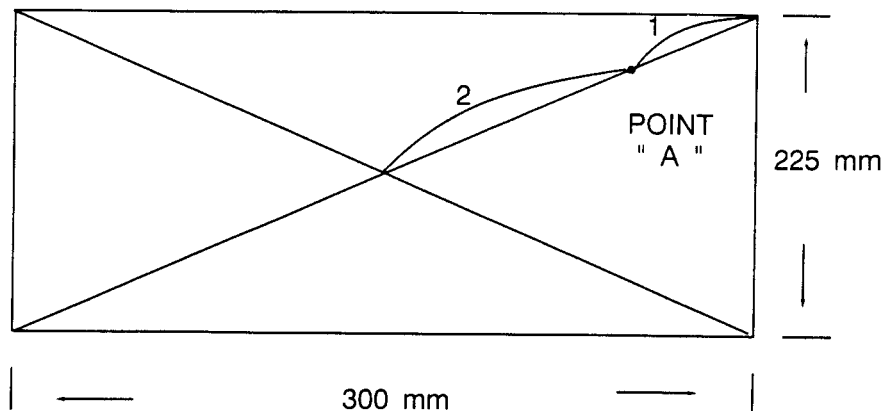
- Video signal : Black pattern in 64KHz.
- Adjust the Brightness using the Bright control key.
- Limit : $0.5 \text{ F/L} \pm 0.2 \text{ F/L}$

4-7-4 Contrast setting

- Video signal : Light white pattern in 64KHz.
- Adjust the Brightness using the Contrast control key.
- Limit : $30.0 \text{ F/L} \pm 1.0 \text{ F/L MAX}$
- After adjusting White Balance, disconnect the pin 4, 5 and 6 of P602.
Verify the image is not saturated when the Contrast and Bright control is maximum.

4-8 Focus

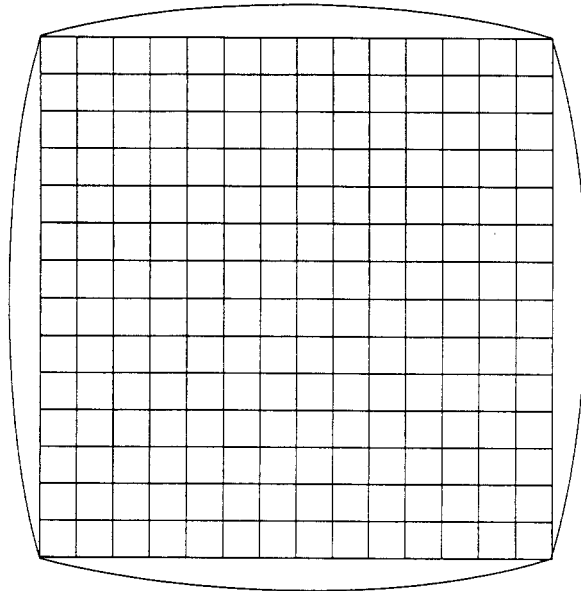
- Video signal : Cross Hatch pattern in 64KHz, 1280×1024 mode.
- Set the Brightness control back-raster to cut-off, Contrast control to 15 F/L
- Adjust two pieces of the Focus VR on the top of the FBT so that the "A" point of the screen looks clear the most.



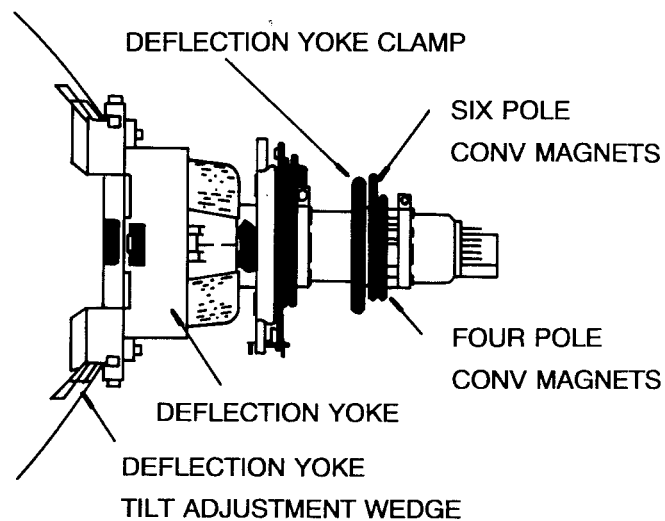
4-9 Static Center Convergence

Turn the monitor on and warm up for 20 minutes. Operate the computer in such a way that the cross hatch pattern is displayed on the screen.(Fig 5)

Convergence error should not be over 0.45mm in corner, 0.3mm in center.



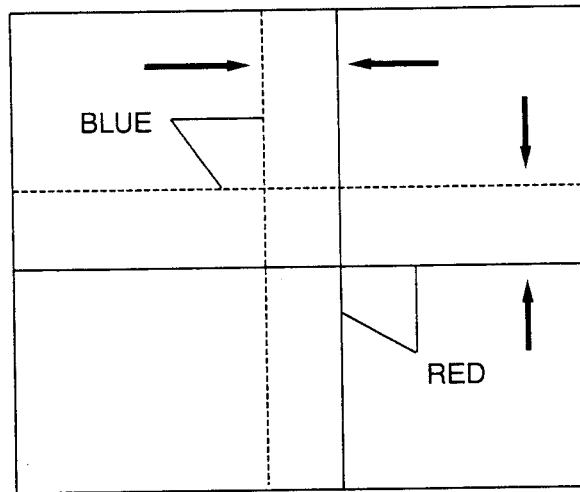
<Fig 5. The cross hatch pattern>
(Horizontal 16 lines min. / Vertical 12 lines min.)



<Fig 6. Picture tube neck components locations>

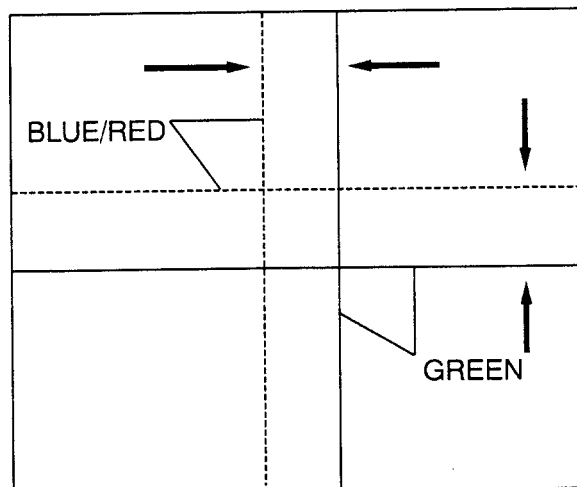
The procedure is as follows.

1. Locate the pair of four pole magnet rings.
2. Rotate the individual rings (change spacing between tabs) to converge the vertical red and blue lines.
3. Rotate the pair of rings (maintaining spacing between tabs) to converge the horizontal red and blue lines. (Refer to Fig. 7)



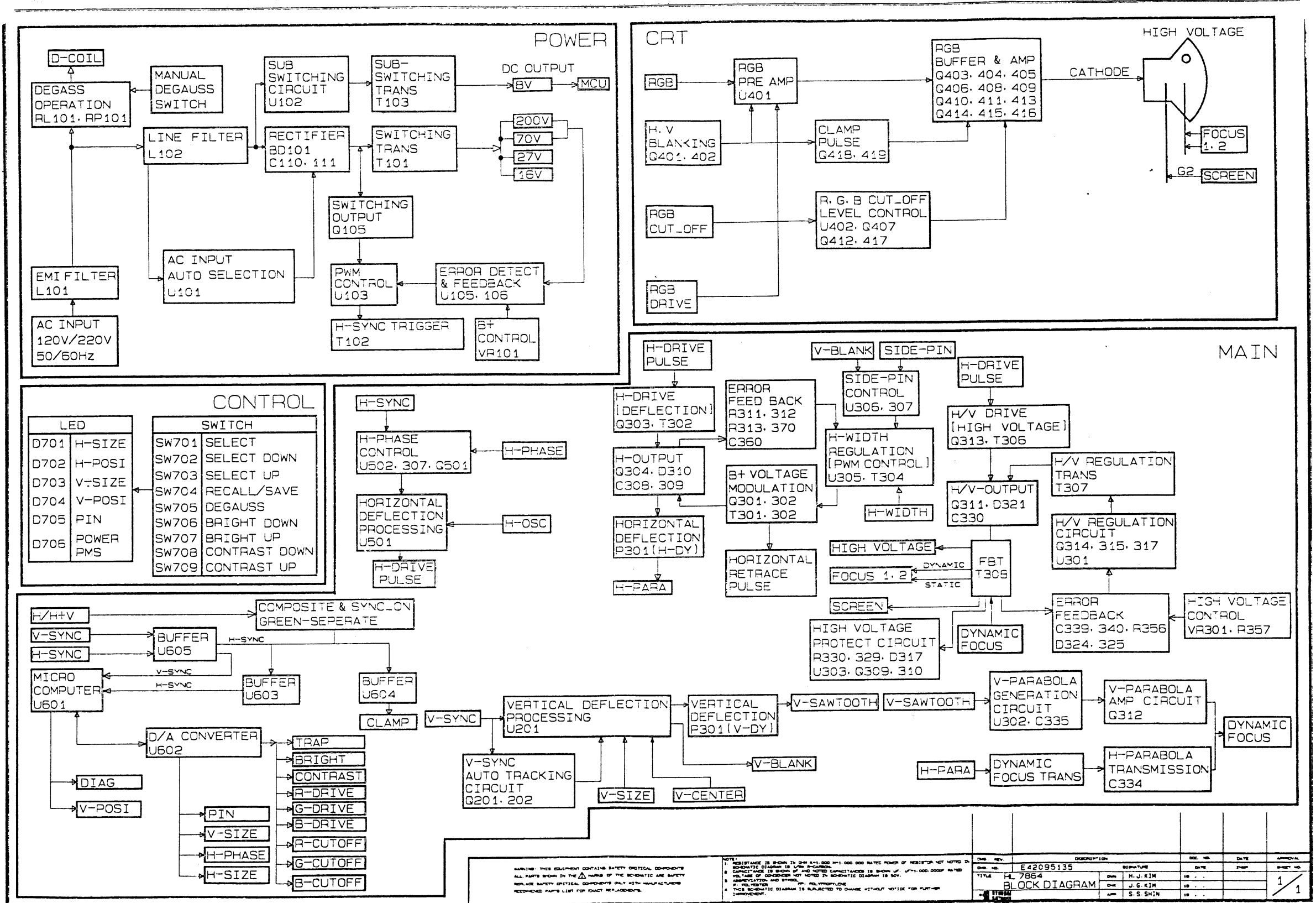
<Fig 7. Static convergence A>

4. After completing the red and blue center convergence, locate the pair of six pole magnet ring.
5. Rotate the individual rings (change spacing between tabs) to converge the vertical red and blue (magenta) and green lines.
6. Rotate the pair of rings (maintaining spacing between tabs) to converge the horizontal red and blue (magenta) and green lines. Refer to figure 8.

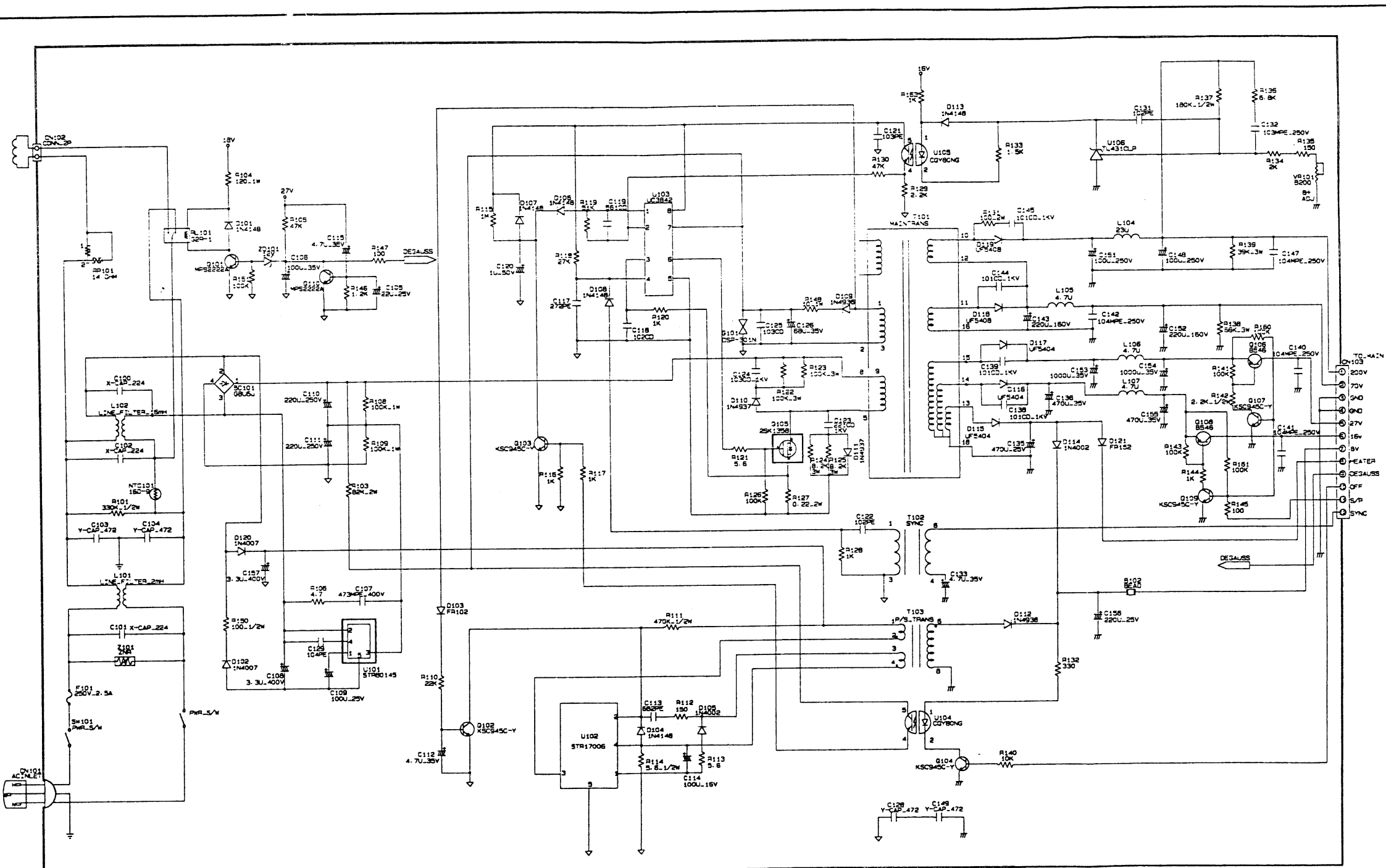


<Fig 8. Static convergence B>

BLOCK DIAGRAM



SCHEMATIC DIAGRAM



WARNING: THIS EQUIPMENT CONTAINS SAFETY CRITICAL COMPONENTS
ALL PARTS SHOWN IN THE Δ MARKS OF THE SCHEMATIC ARE SAFETY
REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURERS
RECOMMENDED PARTS LIST FOR EXACT REPLACEMENT

- NOTE:
1. RESISTANCE IS SHOWN IN OHM K=1,000 M=1,000,000 RATED POWER OF RESISTOR NOT NOTED IN SCHEMATIC DIAGRAM IS 1/8W R-CARBON
 2. CAPACITANCE IS SHOWN UF AND NOTED CAPACITANCE IS SHOWN UF, UF=1,000,000UF RATED VOLTAGE OF CONDENSER NOT NOTED IN SCHEMATIC DIAGRAM IS 50V.
 3. ABBREVIATION AND SYMBOL: PE = POLYESTER PP = POLYPROPYLENE
 4. THIS SCHEMATIC DIAGRAM IS SUBJECT TO CHANGE WITHOUT NOTICE FOR FURTHER IMPROVEMENT.

DES. NO.	REV.	DESCRIPTION	SIGNATURE	DATE	INSP	APPROVAL
E42095122	REV-E					
TITLE		HL-7864 POWER	DWN	K. I. S	1995. 2. 20	1/1
			CHK	K. J. G	1995. 8. 20	
			APP	N. K. H	1995. 2. 20	

DWG. REV.	REV-E	DESCRIPTION	DWG. NO.	DATE	APPROVAL
DWG. NO.	E42095(12)		DATE	DWGP	SHEET NO.
TITLE	HL-7864_MCU	DWN	K. I. S	1995.8.20	2 2
		CNK	K. J. G	1995.8.20	
		APP	N. K. H	1995.8.20	



REPLACEMENT PARTS LIST

PRODUCT SAFETY NOTICE : COMPONENTS MARKED WITH SPECIAL
CHARACTERISTICS ARE IMPORTANT TO SAFETY.

ABBREVIATIONS : RD R-CARBON

RS R-METAL OXIDE

RX R-CEMENT WIRE

RN R-METAL($\pm 1\%$)

CK C-CERAMIC, HK

CE C-ELECTROLYTIC

CC C-CERAMIC, TEMP

CQ C-POLYESTER,
C-POLYPROPYLENE

CF C-METAL POLY ESTER

C-METAL POLY PROPYLENE

MAIN ASSY

NO	PART CODE	DESCRIPTION	RANK	LOCATION
1	E42019111010	COIL,DEGAUSSING HL-7682		
2	E42045259040	CONN ASSY,5P FLAT 260MM		
3	E4203304013H	CRT,VLMF M41KVZ680*71(U)		
4	E42045221060	CABLE,SIG. D-SUB 15P-15P		
5	E42045296010	CABLE ASSY,VIDEO 10P*10P		
6	E42045301010	CONN ASSY,3P*3P UL1007		
7	E42045298010	CABLE ASSY,VIDEO 6P*7P		
8	E42045297010	CABLE ASSY,VIDEO 7P*7P		

PCB ASSY MAIN

NO	PART CODE	DESCRIPTION	RANK	LOCATION
1	E42081143010	PCB,MAIN 243*330 CEM-1 S/		
2	E42045207090	WIRE ASSY,JUM 210MM RD		
3	E42045259040	CONN ASSY,5P FLAT 260MM		
4	E42045296010	CABLE ASSY,VIDEO 10P*10P		
5	E42045297010	CABLE ASSY,VIDEO 7P*7P		
6	E42045298010	CABLE ASSY,VIDEO 6P*7P		
7	E42045301010	CONN ASSY,3P*3P UL1007		
8	E42019099010	BEAD CORE		B301
9	E42019094010	CORE,BEAD HF55BTL3.5*4.5R		B302
10	E42019099010	BEAD CORE		B303
11	CF93BT1J224J	CAP-MPE,63V 0.22UF J		C201
12	CQ92BT2A102J	CAP-PE,100V 0.001UF J		C202
13	CF93BT1J104J	CAP-MPE,63V 0.1UF J		C203
14	CF93BT1J393J	CAP-MPE,63V 0.039UF J		C204
15	CE04BT1H010M	CAP-EL,SMS 50V 1UF M		C205
16	CF93BT1J393J	CAP-MPE,63V 0.039UF J		C206
17	CF93BT1J473J	CAP-MPE,63V 0.047UF J		C207
18	CF93BT1J473J	CAP-MPE,63V 0.047UF J		C208
19	CF93BT1J105J	CAP-MPE,63V 1UF J		C209
20	CE04BT1C101M	CAP-EL,SMS 16V 100UF M		C210
21	CE04BF1V222M	CAP-EL,SMS 35V 2200UF M		C211
22	CF93BT1J104J	CAP-MPE,63V 0.1UF J		C213
23	CK45BT1H103K	CAP-CD,50V 0.01UF K		C214
24	CE04BF1V331M	CAP-EL,SMS 35V 330UF M		C215
25	CE04BT1H470M	CAP-EL,SMS 50V 47UF M		C216
26	CF93BT1J103J	CAP-MPE,63V 0.01UF J		C301
27	CQ92BT2A332J	CAP-PE,100V 3300PF J		C302
28	CF93PN2G473J	CAP-MPP,400V 0.047UF J		C303
29	CS75AT1E330M	CAP-TT,25V 33UF M		C304
30	CS75AT1E330M	CAP-TT,25V 33UF M		C305
31	CF93BT1J105J	CAP-MPE,63V 1UF J		C306
32	CE04BT1V470M	CAP-EL,SMS 35V 47UF M		C307
33	CQ93PN3C472J	CAP-PP,1.6KV 0.0047UF J		C308
34	CQ93PN3C681J	CAP-PP,1.6KV 680PF J		C309
35	CK45BT2H102K	CAP-CD,500V 1000PF K		C310
36	CK45BT2H102K	CAP-CD,500V 1000PF K		C311
37	CQ93PN2G684J	CAP-PP,400V 0.68UF J BULK		C312
38	CQ93PN2G224J	CAP-PP,400V 0.22UF J BULK		C313
39	CQ93PN2G154J	CAP-PP,400V 0.15UF J BULK		C314
40	CF93MN2E103J	CAP-MPE,250V 0.01UF J		C315
41	CQ93PN2G224J	CAP-PP,400V 0.22UF J BULK		C316
42	CQ93PN2G224J	CAP-PP,400V 0.22UF J BULK		C317
43	CQ93PN2G154J	CAP-PP,400V 0.15UF J BULK		C318

NO	PART CODE	DESCRIPTION	RANK	LOCATION
44	E44007010270	CAP-MCD,Z5U 50V 0.1UF Z		C319
45	E44007010270	CAP-MCD,Z5U 50V 0.1UF Z		C320
46	E44007010270	CAP-MCD,Z5U 50V 0.1UF Z		C321
47	CK45BT1H103K	CAP-CD,50V 0.01UF K		C322
48	CK45BT1H103K	CAP-CD,50V 0.01UF K		C323
49	CK45BT1H103K	CAP-CD,50V 0.01UF K		C324
50	CE04BT1E470M	CAP-EL,SMS 25V 47UF M		C325
51	CE04BT1C470M	CAP-EL,SMS 16V 47UF M		C326
52	CQ92PT2A471J	CAP-PP,100V 470PF J		C327
53	CS75AT1E330M	CAP-TT,25V 33UF M		C328
54	CF93BT1J224J	CAP-MPE,63V 0.22UF J		C329
55	CQ93PN3C222J	CAP-PP,1.6KV 2200PF J		C330
56	CE04BF2E470M	CAP-EL,SMS 250V 47UF M		C331
57	CF93PN2G155J	CAP-MPP,400V 1.5UF J		C332
58	CE04BT1C221M	CAP-EL,SMS 16V 220UF M		C333
59	CK45BT2H102K	CAP-CD,500V 1000PF K		C334
60	CF93BT1J103J	CAP-MPE,63V 0.01UF J		C335
61	CE04BT1V330M	CAP-EL,SMS 35V 33UF M		C336
62	CE04BF2E220M	CAP-EL,SMS 250V 22UF M		C338
63	CE04BT1H220M	CAP-EL,SMS 50V 22UF M		C339
64	CF93BT1J104J	CAP-MPE,63V 0.1UF J		C340
65	CE04BT1H2R2M	CAP-EL,SMS 50V 2.2UF M		C341
66	CE04BT1H010M	CAP-EL,SMS 50V 1UF M		C342
67	CE04BF2V100M	CAP-EL,SMS 350V 10UF M		C343
68	CQ92BT2A103J	CAP-PE,100V 0.01UF J		C345
69	CK45BT1H681K	CAP-CD,50V 680PF K		C346
70	CF93BT1J104J	CAP-MPE,63V 0.1UF J		C347
71	CE04BT1C470M	CAP-EL,SMS 16V 47UF M		C348
72	CE04BT1E220M	CAP-EL,SMS 25V 22UF M		C349
73	CE04BT1C221M	CAP-EL,SMS 16V 220UF M		C350
74	CK45BT1H103K	CAP-CD,50V 0.01UF K		C351
75	CE04BT1V100M	CAP-EL,SMS 35V 10UF M		C352
76	CE04BT1H4R7M	CAP-EL,SMS 50V 4.7UF M		C353
77	E44007010270	CAP-MCD,Z5U 50V 0.1UF Z		C354
78	CK45BT1H103K	CAP-CD,50V 0.01UF K		C355
79	CE04BT1E100M	CAP-EL,SMS 25V 10UF M		C356
80	CF93BT1J473J	CAP-MPE,63V 0.047UF J		C357
81	CQ92BT2A472J	CAP-PE,100V 0.0047UF J		C358
82	CQ92BT2A182J	CAP-PE,100V 1800PF J		C359
83	CQ92BT2A682J	CAP-PE,100V 0.0068UF J		C360
84	CK45BT1H103K	CAP-CD,50V 0.01UF K		C361
85	CF93BT1J103J	CAP-MPE,63V 0.01UF J		C362
86	CF93BT1J104J	CAP-MPE,63V 0.1UF J		C363

NO	PART CODE	DESCRIPTION	LOCATION
87	CE04BT1E470M	CAP-EL,SMS 25V 47UF M	C364
88	CF93BT1J473J	CAP-MPE,63V 0.047UF J	C365
89	CE04BT1E100M	CAP-EL,SMS 25V 10UF M	C366
90	CE04BT1H3R3M	CAP-EL,SMS 50V 3.3UF M	C367
91	CF93BT1J224J	CAP-MPE,63V 0.22UF J	C368
92	CE04BT1E100M	CAP-EL,SMS 25V 10UF M	C369
93	CF93BT1J224J	CAP-MPE,63V 0.22UF J	C370
94	CE04BT1H3R3M	CAP-EL,SMS 50V 3.3UF M	C371
95	CK45BT1H101K	CAP-CD,50V 100PF K	C372
96	CE04BT1E100M	CAP-EL,SMS 25V 10UF M	C373
97	E44007010270	CAP-MCD,Z5U 50V 0.1UF Z	C374
98	CQ92BT2A102J	CAP-PE,100V 0.001UF J	C375
99	E44007010270	CAP-MCD,Z5U 50V 0.1UF Z	C376
100	E44007010270	CAP-MCD,Z5U 50V 0.1UF Z	C377
101	CE04BT1C470M	CAP-EL,SMS 16V 47UF M	C378
102	CE04BT1C470M	CAP-EL,SMS 16V 47UF M	C379
103	CE04BT1E470M	CAP-EL,SMS 25V 47UF M	C380
104	E44007010270	CAP-MCD,Z5U 50V 0.1UF Z	C382
105	CE04BT1E101M	CAP-EL,SMS 25V 100UF M	C383
106	CE04BT1C470M	CAP-EL,SMS 16V 47UF M	C384
107	CK45BT2H102K	CAP-CD,500V 1000PF K	C385
108	CQ93PN3C822J	CAP-PP,1.6KV 8200PF J	C387
109	CE04BF2E470M	CAP-EL,SMS 250V 47UF M	C388
110	CE04BF1E471M	CAP-EL,SMS 25V 470UF M	C391
111	CK45BT1H103K	CAP-CD,50V 0.01UF K	C501
112	CE04BT1V4R7M	CAP-EL,SMS 35V 4.7UF M	C502
113	CE04BT1H2R2M	CAP-EL,SMS 50V 2.2UF M	C503
114	E42007019250	CAP-PP/PE,100V 560PF J	C504
115	CF93BT1J103J	CAP-MPE,63V 0.01UF J	C505
116	CF93BT1J105J	CAP-MPE,63V 1UF J	C506
117	CK45BT1H103K	CAP-CD,50V 0.01UF K	C507
118	CE04BT1C101M	CAP-EL,SMS 16V 100UF M	C508
119	CQ92PT2A471J	CAP-PP,100V 470PF J	C509
120	CQ92PT2A471J	CAP-PP,100V 470PF J	C510
121	CQ93PT2A272J	CAP-PP,100V 2700PF J TAP	C511
122	CE04BT1H010M	CAP-EL,SMS 50V 1UF M	C512
123	CE04BT1V4R7M	CAP-EL,SMS 35V 4.7UF M	C601
124	CE04BT1C470M	CAP-EL,SMS 16V 47UF M	C602
125	CE04BT1V4R7M	CAP-EL,SMS 35V 4.7UF M	C603
126	CE04BT1C470M	CAP-EL,SMS 16V 47UF M	C604
127	E44007010270	CAP-MCD,Z5U 50V 0.1UF Z	C607
128	CE04BF1C471M	CAP-EL,SMS 16V 470UF M	C608
129	CC45CT1H220K	CAP-CD,50V 22PF K	C609

NO	PART CODE	DESCRIPTION	RANK	LOCATION
130	CC45CT1H220K	CAP-CD,50V 22PF K		C610
131	CK45BT1H332K	CAP-CD,50V 3300PF K		C611
132	E44007010270	CAP-MCD,Z5U 50V 0.1UF Z		C612
133	CE04BT1V4R7M	CAP-EL,SMS 35V 4.7UF M		C613
134	E44007010270	CAP-MCD,Z5U 50V 0.1UF Z		C614
135	CE04BT1E100M	CAP-EL,SMS 25V 10UF M		C615
136	CE04BT1E100M	CAP-EL,SMS 25V 10UF M		C616
137	CE04BT1C221M	CAP-EL,SMS 16V 220UF M		C617
138	CE04BT1V4R7M	CAP-EL,SMS 35V 4.7UF M		C618
139	CC45CT1H101K	CAP-CD,50V 100PF K		C619
140	CK45BT1H103K	CAP-CD,50V 0.01UF K		C620
141	CK45BT1H471K	CAP-CD,470PF TAP&FORM		C622
142	CK45BT1H222K	CAP-CD,50V 2200PF K		C623
143	E44007010270	CAP-MCD,Z5U 50V 0.1UF Z		C624
144	CE04BT1C101M	CAP-EL,SMS 16V 100UF M		C625
145	CK45BT1H102K	CAP-CD,50V 1000PF K		C626
146	CE04BT1H010M	CAP-EL,SMS 50V 1UF M		C627
147	CK45BT1H101K	CAP-CD,50V 100PF K		C628
148	CE04BT1H010M	CAP-EL,SMS 50V 1UF M		C629
149	CE04BT1C470M	CAP-EL,SMS 16V 47UF M		C630
150	E44007010270	CAP-MCD,Z5U 50V 0.1UF Z		C631
151	CE04BT1C470M	CAP-EL,SMS 16V 47UF M		C632
152	CE04BT1C470M	CAP-EL,SMS 16V 47UF M		C633
153	E44007010270	CAP-MCD,Z5U 50V 0.1UF Z		C635
154	E44007010270	CAP-MCD,Z5U 50V 0.1UF Z		C636
155	E44007010270	CAP-MCD,Z5U 50V 0.1UF Z		C637
156	E44007010270	CAP-MCD,Z5U 50V 0.1UF Z		C638
157	E44007010270	CAP-MCD,Z5U 50V 0.1UF Z		C639
158	DT1N4148	DIODE,1N4148 TAPING		D201
159	DT1N4001	DIODE,50V 1.0A TAP		D202
160	DTUF5404	DIODE,UF5404		D301
161	DT1N4148	DIODE,1N4148 TAPING		D302
162	DTUF5404	DIODE,UF5404		D303
163	DT1N4937	DIODE,1N4937 TAPING		D304
164	DT1N4937	DIODE,1N4937 TAPING		D305
165	DTUZ-12BSB	DIODE,ZENER UZ-12BSB TAP		D306
166	DT1N4002	DIODE,100V 1.0A TAP		D307
167	DT1N4002	DIODE,100V 1.0A TAP		D308
168	DTUF4001	DIODE,UF4001		D309
169	DNCTU-G3DR	DIODE,DAMPER CTU-G3DR		D310
170	DT1N4148	DIODE,1N4148 TAPING		D311
171	DT1N4148	DIODE,1N4148 TAPING		D312
172	DT1N4148	DIODE,1N4148 TAPING		D313

NO	PART CODE	DESCRIPTION	RANK	LOCATION
173	DT1N4148	DIODE,1N4148 TAPING		D314
174	DT1N4148	DIODE,1N4148 TAPING		D315
175	DT1N4148	DIODE,1N4148 TAPING		D316
176	DT1N4937	DIODE,1N4937 TAPING		D317
177	DTUZ-12BSB	DIODE,ZENER UZ-12BSB TAP		D318
178	DT1N4002	DIODE,100V 1.0A TAP		D319
179	DT1N4002	DIODE,100V 1.0A TAP		D320
180	DNRU4DS	DIODE,RU4DS		D321
181	DTUF4007	DIODE,UF4007		D322
182	DT1N4148	DIODE,1N4148 TAPING		D323
183	DT1N4002	DIODE,100V 1.0A TAP		D324
184	DT1N4002	DIODE,100V 1.0A TAP		D325
185	DTUF4007	DIODE,UF4007		D326
186	DT1N4937	DIODE,1N4937 TAPING		D327
187	DT1N4148	DIODE,1N4148 TAPING		D329
188	DTRGP02-16	DIODE,RGP02-16		D330
189	DTUF4004	DIODE,UF4004		D331
190	DT1N4148	DIODE,1N4148 TAPING		D332
191	DT1N4148	DIODE,1N4148 TAPING		D333
192	DT1N4148	DIODE,1N4148 TAPING		D334
193	DT1N4148	DIODE,1N4148 TAPING		D335
194	DT1N4148	DIODE,1N4148 TAPING		D336
195	DT1N4148	DIODE,1N4148 TAPING		D337
196	DT1N4148	DIODE,1N4148 TAPING		D338
197	DT1N4148	DIODE,1N4148 TAPING		D339
198	DT1N4148	DIODE,1N4148 TAPING		D340
199	DT1N4148	DIODE,1N4148 TAPING		D341
200	DT1N4148	DIODE,1N4148 TAPING		D342
201	DTUZ-5.1BSB	DIODE,ZENER UZ-5.1BSB TAP		D345
202	DTBAT42	DIODE,BAT42		D348
203	DTBAT42	DIODE,BAT42		D349
204	DTUZ-12BSB	DIODE,ZENER UZ-12BSB TAP		D350
205	DTUZ-5.1BSB	DIODE,ZENER UZ-5.1BSB TAP		D601
206	DTUZ-5.1BSB	DIODE,ZENER UZ-5.1BSB TAP		D602
207	DT1N4148	DIODE,1N4148 TAPING		D603
208	DT1N4148	DIODE,1N4148 TAPING		D604
209	DT1N4148	DIODE,1N4148 TAPING		D606
210	DT1N4148	DIODE,1N4148 TAPING		D607
211	DT1N4148	DIODE,1N4148 TAPING		D608
212	DT1N4148	DIODE,1N4148 TAPING		D609
213	E42039003030	SURGE,PROTECTOR DSP-751N		G301
214	E42019085040	COIL,CHOKE 10MH 15%		L301
215	E42019121020	COIL,LINE VARI 3.0UH 5%		L302

NO	PART CODE	DESCRIPTION	RANK	LOCATION
216	E42019121010	COIL,LINE		L303
217	E42043007050	CONN POST 6P 5267-06A		P301
218	E42043007060	CONN. POST-7P 5267-07A		P302
219	E42043024110	CONN POST,5273-12A		P303
220	E42043029020	CONN POST 1PIN DEBP-230		P304
221	E42043029020	CONN POST 1PIN DEBP-230		P305
222	E42043029020	CONN POST 1PIN DEBP-230		P306
223	E42043029020	CONN POST 1PIN DEBP-230		P307
224	E42043007050	CONN POST 6P 5267-06A		P602
225	E42043007100	CONN,POST-11 P 5267-11A		P603
226	E42043076010	CONN,D-SUB 15P 3R FEMALE		P604
227	E42043007090	5267-10A CONN POST-10P		P605
228	TTKSA733CY	TR,KSA733C-Y		Q201
229	TTKSC945CY	TR,KSC945C-Y		Q202
230	TNTIP29	TR,TIP29(WITH BUSHING)		Q203
231	TTVN0606M	FET,VN0606M N-CHANAL		Q301
232	TNIRF740	FET IRF740		Q302
233	TTVN0606M	FET,VN0606M N-CHANAL		Q303
234	TNMJW16212	TR,MJW16212		Q304
235	TNIRF640	MOSFET,IRF640(WITH BUSHIN		Q305
236	TNIRF640	MOSFET,IRF640(WITH BUSHIN		Q306
237	TNIRF640	MOSFET,IRF640(WITH BUSHIN		Q307
238	TTKSC1008Y	TR,KSC1008-Y		Q308
239	TTKSA733CY	TR,KSA733C-Y		Q309
240	TTKSA733CY	TR,KSA733C-Y		Q310
241	TNMJW16212	TR,MJW16212		Q311
242	TN2SC3675	TR, 2SC3675		Q312
243	TTVN2222LL	TR,VN2222LL		Q313
244	TTKSA733CY	TR,KSA733C-Y		Q314
245	TNIRF740	FET IRF740		Q315
246	TTKSA733CY	TR,KSA733C-Y		Q316
247	TTKSP2222A	TR,KSP2222A		Q317
248	TTKSP92	TR,KSP92		Q318
249	TTKSA733CY	TR,KSA733C-Y		Q319
250	TTKSP2222A	TR,KSP2222A		Q320
251	TTKSP2222A	TR,KSP2222A		Q321
252	TTMPS2907	TR,MPS2907 TAPPING		Q501
253	TTMPS3646	TR,MPS3646		Q502
254	TTKSP2222A	TR,KSP2222A		Q503
255	TTKSC945CY	TR,KSC945C-Y		Q605
256	TTKSC945CY	TR,KSC945C-Y		Q606
257	TTKSC945CY	TR,KSC945C-Y		Q607
258	TTKSC945CY	TR,KSC945C-Y		Q608

NO	PART CODE	DESCRIPTION	RANK	LOCATION
259	TTKSC945CY	TR,KSC945C-Y		Q609
260	TTKSA733CY	TR,KSA733C-Y		Q610
261	TTKSC945CY	TR,KSC945C-Y		Q611
262	RD-8P0T0243J	RES-CF, RD 1/8W 24K OHM J		R201
263	RD-8P0T0392J	RES-CF, RD 1/8W 3.9K OHM J		R202
264	RD-8P0T0392J	RES-CF, RD 1/8W 3.9K OHM J		R203
265	RD-8P0T0512J	RES-CF, RD 1/8W 5.1K OHM J		R204
266	RN-4P0T1202F	RES-MF, RN 1/4W 12K OHM F		R205
267	RD-8P0T0121J	RES-CF, RD 1/8W 120 OHM J		R206
268	RD-8P0T0103J	RES-CF, RD 1/8W 10KOHM J		R207
269	RD-8P0T0103J	RES-CF, RD 1/8W 10KOHM J		R208
270	RD-8P0T0103J	RES-CF, RD 1/8W 10KOHM J		R209
271	RD-8P0T0103J	RES-CF, RD 1/8W 10KOHM J		R210
272	RD-4P0T0394J	RES-CF, RD 1/4W 390K OHM J		R211
273	RD-8P0T0183J	RES-CF, RD 1/8W 18K OHM J		R212
274	RD-8P0T0472J	RES-CF, RD 1/8W 4.7K OHM J		R213
275	RD-4P0T0244J	RES-CF, RD 1/4W 240K OHM J		R214
276	RD-4P0T0334J	RES-CF, RD 1/4W 330K OHM J		R215
277	RD-4P0T0244J	RES-CF, RD 1/4W 240K OHM J		R216
278	RD-8P0T0334J	RES-CF, RD 1/8W 330K OHM J		R217
279	RD-8P0T0124J	RES-CF, RD 1/8W 120K OHM J		R218
280	RD-8P0T0470J	RES-CF, RD 1/8W 47 OHM J		R219
281	RD-2P0T02R2J	RES-CF, RD 1/2W 2.2 OHM J		R220
282	RD-8P0T0122J	RES-CF, RD 1/8W 1.2K OHM J		R221
283	RD-2P0T0R50J	RES-CF, RD 1/2W 0.5 OHM J		R222
284	RD-8P0T0242J	RES-CF, RD 1/8W 2.4K OHM J		R223
285	RS01P0T0391J	RES-MOF, RS 1W 390 OHM J		R224
286	RS01P0T0560J	RES-MOF, RS 1W 56 OHM J		R225
287	RD-4P0T0331J	RES-CF, RD 1/4W 330 OHM J		R226
288	RX05E0N0331J	RES-CM, 5W 330 OHM J RAD		R227
289	RX05E0N0331J	RES-CM, 5W 330 OHM J RAD		R228
290	RD-2P0T01R2J	RES-CF, RD 1/2W 1.2 OHM J		R229
291	RD-4P0T0472J	RES-CF, RD 1/4W 4.7K OHM J		R230
292	RD-8P0T0121J	RES-CF, RD 1/8W 120 OHM J		R301
293	RD-4P0T0121J	RES-CF, RD 1/4W 120 OHM J		R302
294	RD-4P0T0104J	RES-CF, RD 1/4W 100K OHM J		R303
295	RD-2P0T0R50J	RES-CF, RD 1/2W 0.5 OHM J		R304
296	RX05E0N0680J	RES-CM, 5W 68 OHM J RAD		R305
297	RX05E0N0390J	RES-CM, 5W 39 OHM J		R306
298	RS02P0F0330J	RES-MOF, 2W 33 OHM J		R307
299	RS02P0F0470J	RES-MOF, 2W 47 OHM J BULK		R308
300	RD-8P0T0101J	RES-CF, RD 1/8W 100 OHM J		R309
301	RD-2P0T0221J	RES-CF, RD 1/2W 220 OHM J		R310

NO	PART CODE	DESCRIPTION	RANK	LOCATION
302	RD-2P0T03R3J	RES-CF, RD 1/2W 3.3 OHM J		R311
303	RD-2P0T03R3J	RES-CF, RD 1/2W 3.3 OHM J		R312
304	RD-2P0T03R3J	RES-CF, RD 1/2W 3.3 OHM J		R313
305	RS02P0F0271J	RES-MOF, 2W 270 OHM J BULK		R314
306	RS02P0F0271J	RES-MOF, 2W 270 OHM J BULK		R315
307	RS02P0F0101J	RES-MOF, 2W 100 OHM J BU		R316
308	RD-8P0T0105J	RES-CF, RD 1/8W 1M OHM J		R317
309	RD-8P0T0105J	RES-CF, RD 1/8W 1M OHM J		R318
310	RD-8P0T0105J	RES-CF, RD 1/8W 1M OHM J		R319
311	RD-8P0T0122J	RES-CF, RD 1/8W 1.2K OHM J		R320
312	RD-8P0T0122J	RES-CF, RD 1/8W 1.2K OHM J		R321
313	RD-8P0T0122J	RES-CF, RD 1/8W 1.2K OHM J		R322
314	RD-8P0T0122J	RES-CF, RD 1/8W 1.2K OHM J		R323
315	RD-8P0T0681J	RES-CF, RD 1/8W 680 OHM J		R324
316	RD-8P0T0102J	RES-CF, RD 1/8W 1K OHM J		R325
317	RD-8P0T0272J	RES-CF, RD 1/8W 2.7K OHM J		R326
318	RD-8P0T0472J	RES-CF, RD 1/8W 4.7K OHM J		R327
319	RD-8P0T0472J	RES-CF, RD 1/8W 4.7K OHM J		R328
320	RN-8P0T5621F	RES-MF, RN 1/8W 5.62KOHM F		R329
321	RN-8P0T3902F	RES-MF, RN 1/8W 39K OHM F		R330
322	RS03P0F0221J	RES-MOF, RS 3W 220 OHM J		R331
323	RD-2P0T0221J	RES-CF, RD 1/2W 220 OHM J		R332
324	RD-4P0T0101J	RES-CF, RD 1/4W 100 OHM J		R333
325	RD-2P0T02R2J	RES-CF, RD 1/2W 2.2 OHM J		R334
326	RS01P0T01R8J	RES-MOF, RS 1W 1.8 OHM J		R335
327	RD-2P0T0274J	RES-CF, RD 1/2W 270K OHM J		R336
328	RD-2P0T0334J	RES-CF, RD 1/2W 330KOHM J		R337
329	RD-8P0T0122J	RES-CF, RD 1/8W 1.2K OHM J		R338
330	RD-8P0T0102J	RES-CF, RD 1/8W 1K OHM J		R339
331	RD-8P0T0472J	RES-CF, RD 1/8W 4.7K OHM J		R340
332	RD-8P0T0272J	RES-CF, RD 1/8W 2.7K OHM J		R341
333	RD-8P0T0102J	RES-CF, RD 1/8W 1K OHM J		R342
334	RN-8P0T1203F	RES-MF, RN 1/8W 120KOHM F		R343
335	RN-8P0T5602F	RES-MF, RN 1/8W 56KOHM F		R344
336	RD-4P0T0332J	RES-CF, RD 1/4W 3.3K OHM J		R345
337	RD-8P0T0183J	RES-CF, RD 1/8W 18K OHM J		R346
338	RD-8P0T0273J	RES-CF, RD 1/8W 27K OHM J		R347
339	RD-8P0T0103J	RES-CF, RD 1/8W 10KOHM J		R348
340	RD-8P0T0512J	RES-CF, RD 1/8W 5.1K OHM J		R349
341	RD-8P0T0102J	RES-CF, RD 1/8W 1K OHM J		R350
342	RD-8P0T0102J	RES-CF, RD 1/8W 1K OHM J		R351
343	RD-4P0T02R2J	RES-CF, RD 1/4W 2.2 OHM J		R352
344	RD-8P0T0101J	RES-CF, RD 1/8W 100 OHM J		R353

NO	PART CODE	DESCRIPTION	RANK	LOCATION
345	RN-8P0T1002F	RES-MF,RN 1/8W 10K OHM F		R354
346	RD-8P0T0102J	RES-CF,RD 1/8W 1K OHM J		R355
347	RD-4P0T0512J	RES-CF,RD 1/4W 5.1K OHM J		R356
348	RD-8P0T0104J	RES-CF,RD 1/8W 100K OHM J		R357
349	RD-4P0T0821J	RES-CF,RD 1/4W 820 OHM J		R358
350	RD-8P0T0103J	RES-CF,RD 1/8W 10KOHM J		R359
351	RD-8P0T0123J	RES-CF,RD 1/8W 12KOHM J		R360
352	RD-8P0T0153J	RES-CF,RD 1/8W 15K OHM J		R361
353	RD-8P0T0682J	RES-CF,RD 1/8W 6.8K OHM J		R362
354	RD-8P0T0153J	RES-CF,RD 1/8W 15K OHM J		R363
355	RN-8P0T3302F	RES-MF,RN 1/8W 33KOHM F		R364
356	RD-8P0T0101J	RES-CF,RD 1/8W 100 OHM J		R365
357	RD-8P0T0103J	RES-CF,RD 1/8W 10KOHM J		R366
358	RD-8P0T0222J	RES-CF,RD 1/8W 2.2K OHM J		R367
359	RD-8P0T0103J	RES-CF,RD 1/8W 10KOHM J		R368
360	RD-4P0T0222J	RES-CF,RD 1/4W 2.2K OHM J		R369
361	RD-4P0T0102J	RES-CF,RD 1/4W 1K OHM J		R370
362	RD-8P0T0334J	RES-CF,RD 1/8W 330K OHM J		R371
363	RD-8P0T0392J	RES-CF,RD 1/8W 3.9K OHM J		R372
364	RD-8P0T0183J	RES-CF,RD 1/8W 18K OHM J		R373
365	RD-8P0T0102J	RES-CF,RD 1/8W 1K OHM J		R374
366	RD-8P0T0473J	RES-CF,RD 1/8W 47K OHM J		R375
367	RD-8P0T0102J	RES-CF,RD 1/8W 1K OHM J		R376
368	RD-8P0T0512J	RES-CF,RD 1/8W 5.1K OHM J		R377
369	RD-8P0T0152J	RES-CF,RD 1/8W 1.5K OHM J		R378
370	RD-8P0T0822J	RES-CF,RD 1/8W 8.2K OHM J		R379
371	RD-8P0T0273J	RES-CF,RD 1/8W 27K OHM J		R380
372	RD-8P0T0103J	RES-CF,RD 1/8W 10KOHM J		R381
373	RD-8P0T0103J	RES-CF,RD 1/8W 10KOHM J		R382
374	RD-8P0T0153J	RES-CF,RD 1/8W 15K OHM J		R383
375	RD-8P0T0104J	RES-CF,RD 1/8W 100K OHM J		R384
376	RD-8P0T0223J	RES-CF,RD 1/8W 22K OHM J		R385
377	RD-4P0T0105J	RES-CF,RD 1/4W 1.0M OHM J		R386
378	RD-8P0T0104J	RES-CF,RD 1/8W 100K OHM J		R387
379	RD-8P0T0223J	RES-CF,RD 1/8W 22K OHM J		R388
380	RD-8P0T0562J	RES-CF,RD 1/8W 5.6K OHM J		R389
381	RD-8P0T0183J	RES-CF,RD 1/8W 18K OHM J		R390
382	RD-8P0T0102J	RES-CF,RD 1/8W 1K OHM J		R391
383	RN-8P0T1913F	RES-MF,RN 1/8W 191KOHM F		R392
384	RD-8P0T0472J	RES-CF,RD 1/8W 4.7K OHM J		R393
385	RD-8P0T0331J	RES-CF,RD 1/8W 330 OHM J		R394
386	RS03P0F0100J	RES-MOF,3W 10 OHM J		R395
387	RD-8P0T0334J	RES-CF,RD 1/8W 330K OHM J		R396

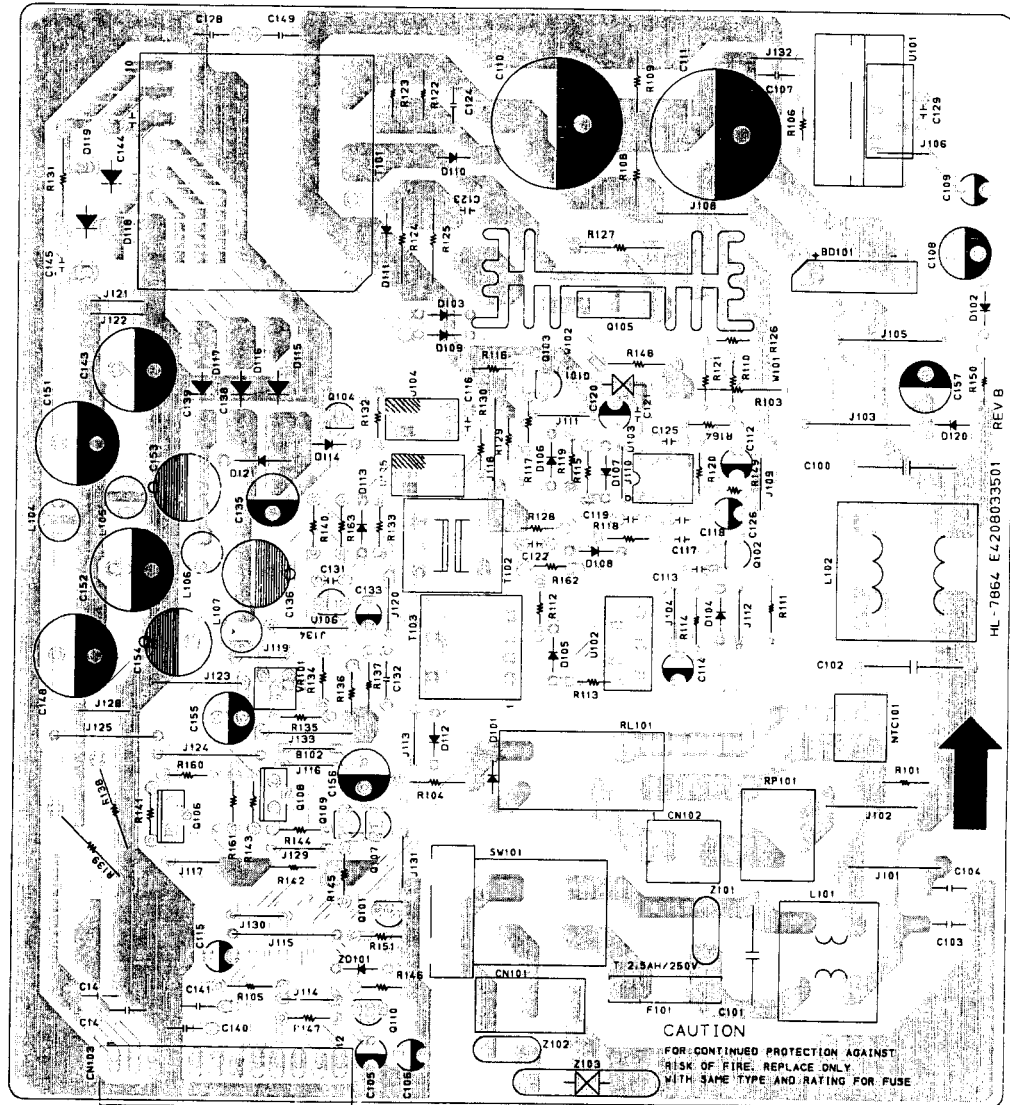
NO	PART CODE	DESCRIPTION	RANK	LOCATION
388	RD-8P0T0153J	RES-CF,RD 1/8W 15K OHM J		R397
389	RX05E0N0181J	RES-CM,5W 180 J RAD		R398
390	RS03P0F0100J	RES-MOF,3W 10 OHM J		R399
391	RD-8P0T0104J	RES-CF,RD 1/8W 100K OHM J		R501
392	RD-8P0T0183J	RES-CF,RD 1/8W 18K OHM J		R502
393	RD-8P0T0564J	RES-CF,RD 1/8W 560K OHM J		R503
394	RD-8P0T0152J	RES-CF,RD 1/8W 1.5K OHM J		R504
395	RD-8P0T0222J	RES-CF,RD 1/8W 2.2K OHM J		R505
396	RD-8P0T0222J	RES-CF,RD 1/8W 2.2K OHM J		R506
397	RD-8P0T0222J	RES-CF,RD 1/8W 2.2K OHM J		R507
398	RD-8P0T0222J	RES-CF,RD 1/8W 2.2K OHM J		R508
399	RD-8P0T0822J	RES-CF,RD 1/8W 8.2K OHM J		R509
400	RD-8P0T0100J	RES-CF,RD 1/8W 10 OHM J		R510
401	RD-8P0T0471J	RES-CF,RD 1/8W 470 OHM J		R511
402	RD-8P0T0222J	RES-CF,RD 1/8W 2.2K OHM J		R512
403	RD-8P0T0822J	RES-CF,RD 1/8W 8.2K OHM J		R513
404	RN-8P0T1003F	RES-MF,RN 1/8W 100KOHM F		R514
405	RN-8P0T5601F	RES-MF,RN 1/8W 5.6KOHM F		R515
406	RN-8P0T5601F	RES-MF,RN 1/8W 5.6KOHM F		R516
407	RD-8P0T0102J	RES-CF,RD 1/8W 1K OHM J		R517
408	RD-2P0T0271J	RES-CF,RD 1/2W 270 OHM J		R518
409	RN-8P0T4702F	RES-MF,RN 1/8W 47KOHM F		R519
410	RD-8P0T0472J	RES-CF,RD 1/8W 4.7K OHM J		R520
411	RD-8P0T0102J	RES-CF,RD 1/8W 1K OHM J		R521
412	RN-8P0T3302F	RES-MF,RN 1/8W 33KOHM F		R522
413	RN-8P0T2702F	RES-MF,RN 1/8W 27K OHM F		R523
414	RD-8P0T0102J	RES-CF,RD 1/8W 1K OHM J		R524
415	RN-8P0T3301F	RES-MF,RN 1/8W 3.3KOHM F		R525
416	RS01P0T0100J	RES-MOF,RS 1W 10 OHM J		R526
417	RS01P0T0104J	RES-MOF,RS 1W 100K OHM J		R527
418	RD-8P0T0103J	RES-CF,RD 1/8W 10KOHM J		R529
419	RD-8P0T0472J	RES-CF,RD 1/8W 4.7K OHM J		R601
420	RD-8P0T0472J	RES-CF,RD 1/8W 4.7K OHM J		R603
421	RD-8P0T0472J	RES-CF,RD 1/8W 4.7K OHM J		R607
422	RD-8P0T0472J	RES-CF,RD 1/8W 4.7K OHM J		R609
423	RD-8P0T0103J	RES-CF,RD 1/8W 10KOHM J		R613
424	RD-8P0T0103J	RES-CF,RD 1/8W 10KOHM J		R614
425	RD-8P0T0221J	RES-CF,RD 1/8W 220 OHM J		R618
426	RD-8P0T0331J	RES-CF,RD 1/8W 330 OHM J		R619
427	RD-8P0T0203J	RES-CF,RD 1/8W 20K OHM J		R621
428	RD-8P0T0472J	RES-CF,RD 1/8W 4.7K OHM J		R622
429	RD-8P0T0472J	RES-CF,RD 1/8W 4.7K OHM J		R623
430	RD-8P0T0472J	RES-CF,RD 1/8W 4.7K OHM J		R624

NO	PART CODE	DESCRIPTION	RANK	LOCATION
431	RD-8P0T0472J	RES-CF, RD 1/8W 4.7K OHM J		R625
432	RD-8P0T0472J	RES-CF, RD 1/8W 4.7K OHM J		R626
433	RD-8P0T0472J	RES-CF, RD 1/8W 4.7K OHM J		R627
434	RD-8P0T0332J	RES-CF, RD 1/8W 3.3K OHM J		R628
435	RD-8P0T0183J	RES-CF, RD 1/8W 18K OHM J		R629
436	RD-8P0T0561J	RES-CF, RD 1/8W 560 OHM J		R630
437	RD-8P0T0471J	RES-CF, RD 1/8W 470 OHM J		R631
438	RD-8P0T0332J	RES-CF, RD 1/8W 3.3K OHM J		R632
439	RD-8P0T0183J	RES-CF, RD 1/8W 18K OHM J		R633
440	RD-8P0T0471J	RES-CF, RD 1/8W 470 OHM J		R634
441	RD-8P0T0393J	RES-CF, RD 1/8W 39K OHM J		R636
442	RD-8P0T0331J	RES-CF, RD 1/8W 330 OHM J		R637
443	RD-8P0T0682J	RES-CF, RD 1/8W 6.8K OHM J		R638
444	RD-8P0T0101J	RES-CF, RD 1/8W 100 OHM J		R639
445	RD-8P0T0474J	RES-CF, RD 1/8W 470KOHM J		R640
446	RD-8P0T0271J	RES-CF, RD 1/8W 270 OHM J		R641
447	RD-8P0T0102J	RES-CF, RD 1/8W 1K OHM J		R642
448	RD-8P0T0562J	RES-CF, RD 1/8W 5.6K OHM J		R643
449	RD-8P0T0681J	RES-CF, RD 1/8W 680 OHM J		R645
450	RD-8P0T0103J	RES-CF, RD 1/8W 10KOHM J		R646
451	RD-8P0T0332J	RES-CF, RD 1/8W 3.3K OHM J		R647
452	RD-8P0T0102J	RES-CF, RD 1/8W 1K OHM J		R648
453	RD-8P0T0472J	RES-CF, RD 1/8W 4.7K OHM J		R649
454	RD-8P0T0121J	RES-CF, RD 1/8W 120 OHM J		R650
455	RD-8P0T0472J	RES-CF, RD 1/8W 4.7K OHM J		R651
456	RD-8P0T0682J	RES-CF, RD 1/8W 6.8K OHM J		R652
457	RD-8P0T0102J	RES-CF, RD 1/8W 1K OHM J		R653
458	RD-8P0T0103J	RES-CF, RD 1/8W 10KOHM J		R655
459	RD-8P0T0470J	RES-CF, RD 1/8W 47 OHM J		R656
460	RD-8P0T0182J	RES-CF, RD 1/8W 1.8K OHM J		R657
461	RD-8P0T0471J	RES-CF, RD 1/8W 470 OHM J		R658
462	RD-8P0T0471J	RES-CF, RD 1/8W 470 OHM J		R659
463	RD-8P0T0103J	RES-CF, RD 1/8W 10KOHM J		R660
464	RD-8P0T0472J	RES-CF, RD 1/8W 4.7K OHM J		R661
465	RD-8P0T0472J	RES-CF, RD 1/8W 4.7K OHM J		R662
466	RD-8P0T0472J	RES-CF, RD 1/8W 4.7K OHM J		R663
467	RN-8P0T2402F	RES-MF, RN 1/8W 24K OHM F		R664
468	RN-8P0T1202F	RES-MF, RN 1/8W 12KOHM F		R665
469	RN-8P0T2401F	RES-MF, RN 1/8W 2.4KOHM F		R666
470	RN-8P0T1001F	RES-MF, RN 1/8W 1K OHM F		R667
471	RN-8P0T1001F	RES-MF, RN 1/8W 1K OHM F		R668
472	RN-8P0T1201F	RES-MF, RN 1/8W 1.2KOHM F		R669
473	RD-8P0T0472J	RES-CF, RD 1/8W 4.7K OHM J		R670

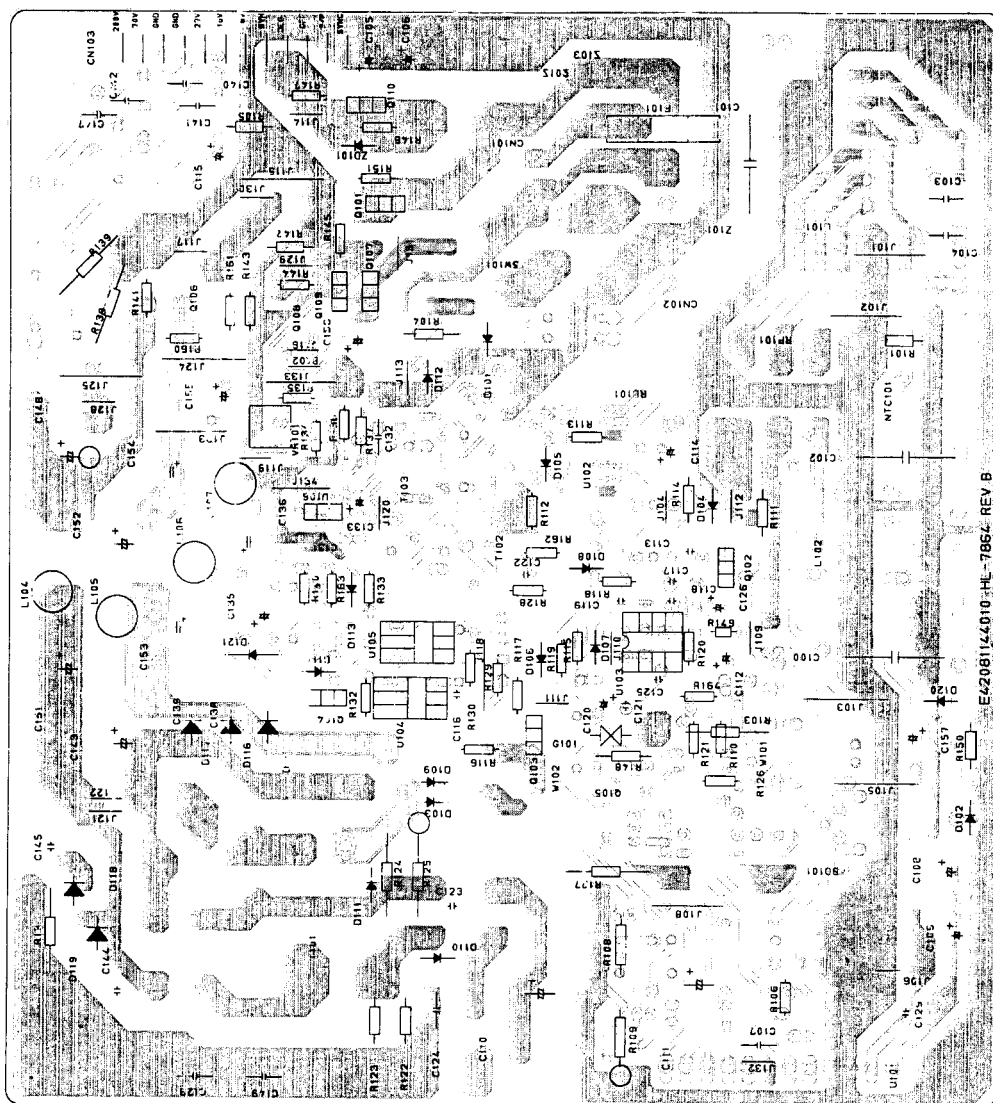
NO	PART CODE	DESCRIPTION	RANK	LOCATION
474	RD-8P0T0472J	RES-CF, RD 1/8W 4.7K OHM J		R671
475	RD-8P0T0472J	RES-CF, RD 1/8W 4.7K OHM J		R672
476	RD-8P0T0221J	RES-CF, RD 1/8W 220 OHM J		R673
477	RD-8P0T0221J	RES-CF, RD 1/8W 220 OHM J		R674
478	E42020005010	RELAY, G6C-2117P-US DC12V		RL301
479	E42031101010	TRANS H.D.F, HL-7864		T301
480	E42031102010	TRANS H.D, HL-7864		T302
481	E42031103010	TRANS H.D.C, HL-7864		T303
482	E42031104010	TRANS H.L, HL-7864		T304
483	E42031105010	TRANS D.F, HL-7864		T305
484	E42031106010	TRANS H.V.D, HL-7864		T306
485	E42031107010	TRANS H.V.F, HL-7864		T307
486	E42048058020	FBT, FTZ-17A008A HL-7864		T308
487	UTDA1675A	IC, TDA1675A		U201
488	UTL494	IC, TL494		U301
489	ULM431ACZT	ADJ SHUNT REG LM431 TAP		U302
490	ULM431ACZT	ADJ SHUNT REG LM431 TAP		U303
491	ULM358	IC, LM358		U304
492	UKA3843	IC, KA3843 DIP CONTROLLER		U305
493	UMC14066BCP	IC, MC14066BCP		U306
494	ULM324	IC OP AMP, KA324N		U307
495	ULM7805CT	IC, VOL REGULATOR, LM7805CT		U308
496	ULM7812CT	IC, VOL REGULATOR, LM7812CT		U309
497	UMC14046	IC, MC14046		U501
498	U74LS221P	IC, 74LS221P DIP TYPE		U502
499	UST63T69C	IC, UST63T69C MCU OTP		U601
500	UMC62358P	IC, DAC MC62358P		U602
501	U74HCT393	IC, 74HCT393		U603
502	U74LS123	IC, TTL 74LS123		U604
503	U74HCT86	IC TTL, 74HCT86 CMOS		U605
504	U74HC595N	IC, MC74HC595N DIP		U606
505	UKIA7045P	IC, KIA7045P		U607
506	UGL339	IC, GL339		U608
507	ULM7805CT	IC, VOL REGULATOR, LM7805CT		U609
508	E42015045120	V-SEMI, VERT 0.1W B50K TAP		VR201
509	E42015046120	V-SEMI, HORI 0.1W B50K TAP		VR301
510	E44021001170	X-TAL, 8MHZ		X601

PCB LAYOUT

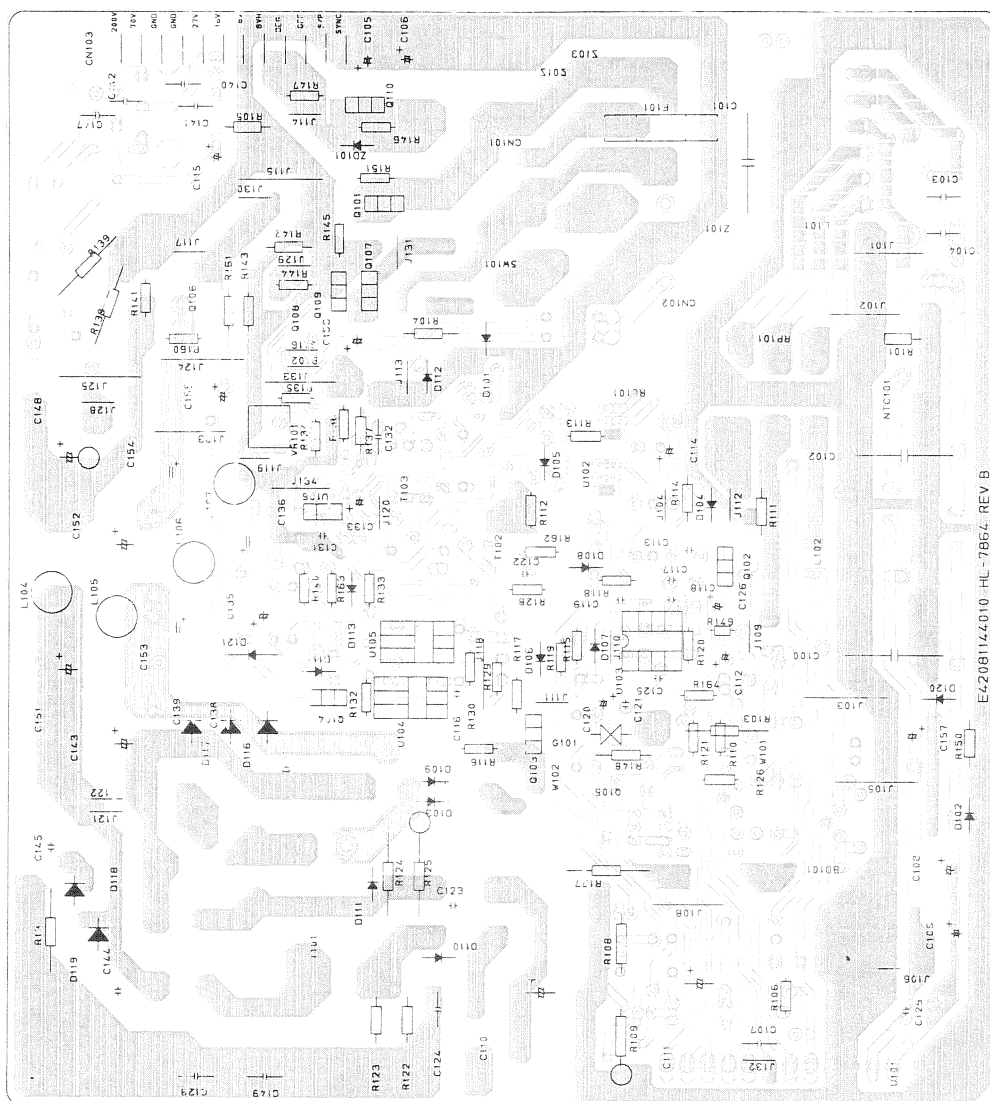
1-1 POWER COMPONENT



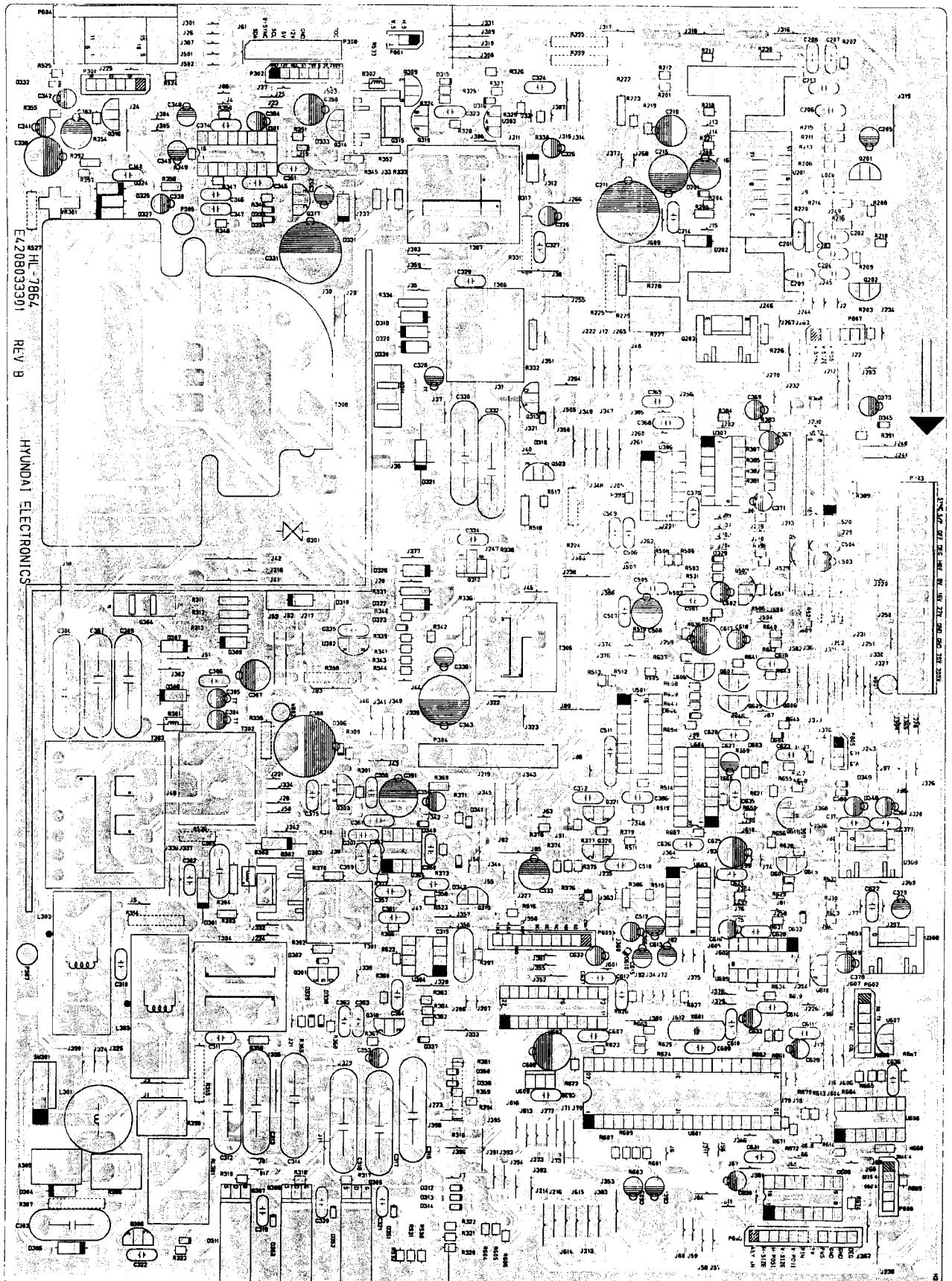
1-2 POWER SOLDER LAND



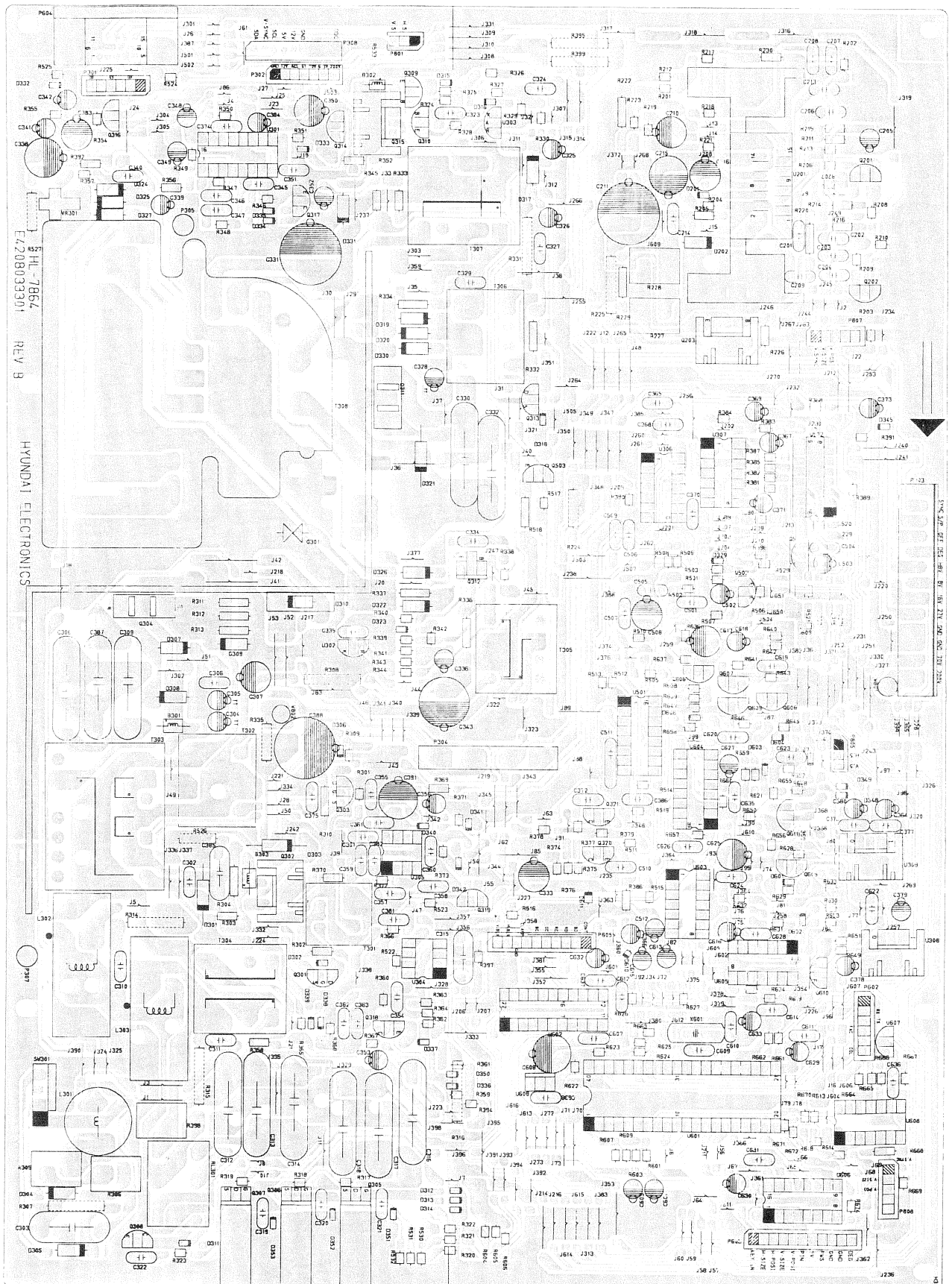
1-2 POWER SOLDER LAND



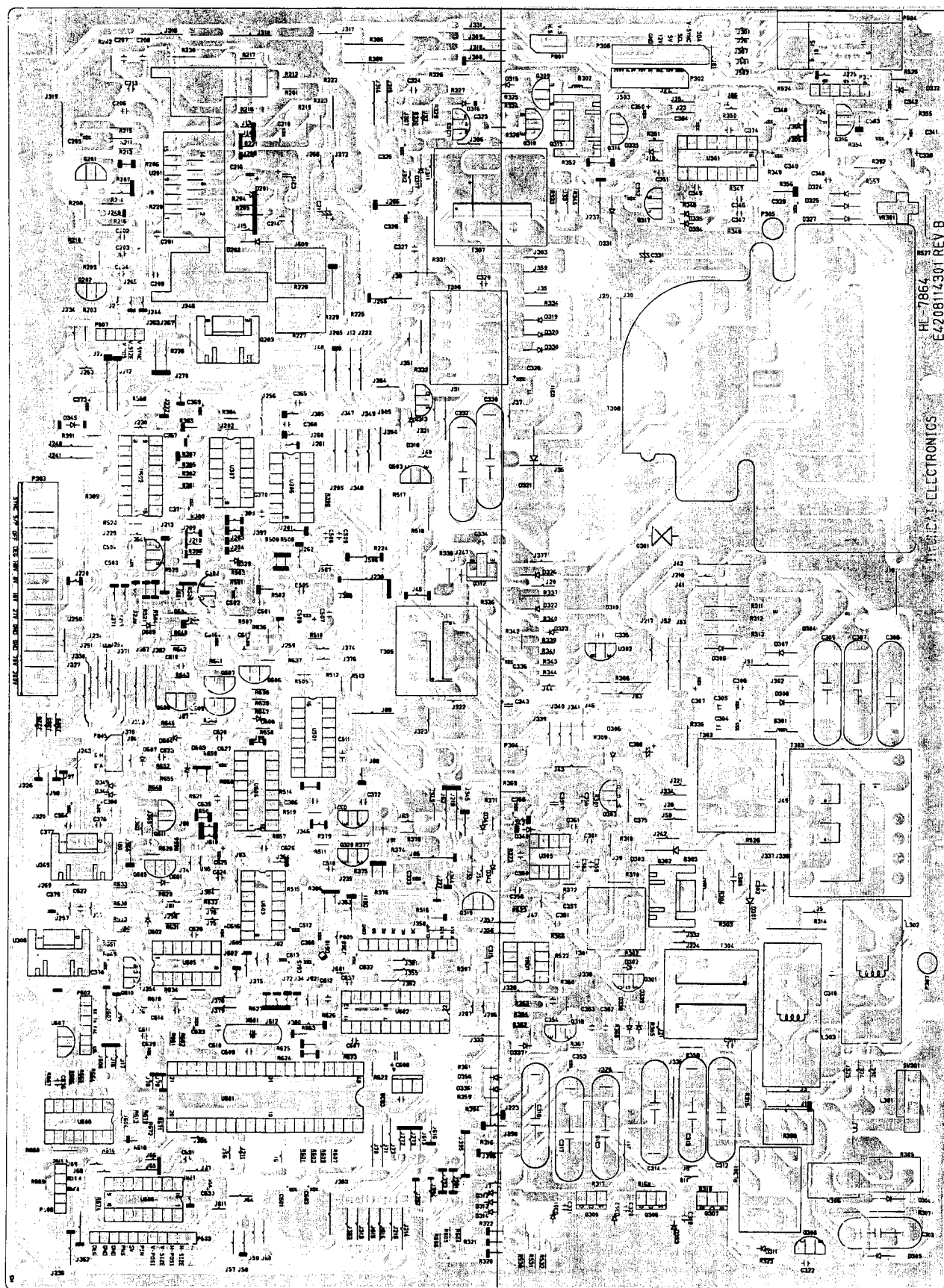
2-1 MAIN COMPONENT



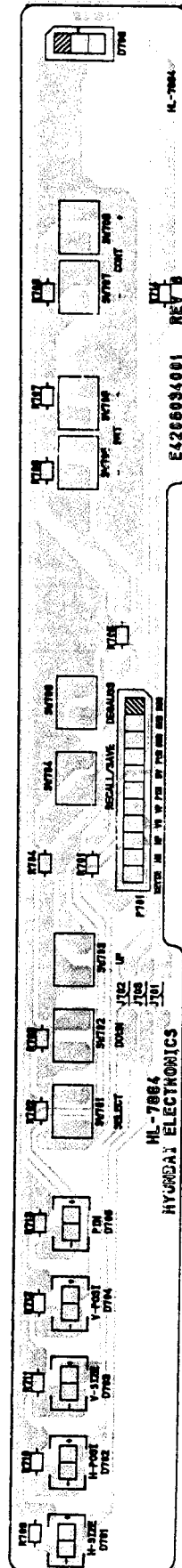
2-1 MAIN COMPONENT



2-2 MAIN SOLDER LAND



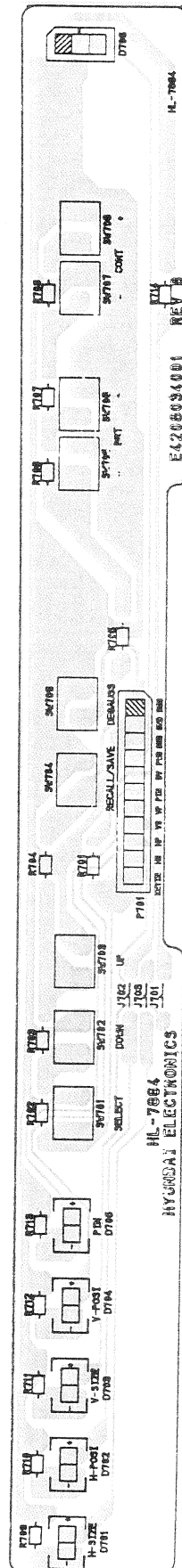
3-1 CTL COMPONENT



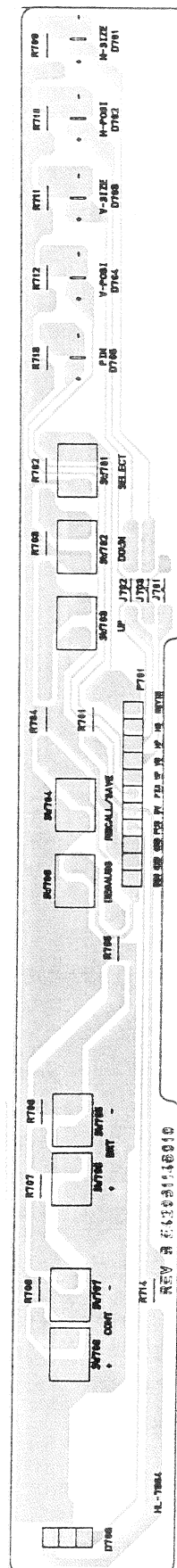
HL-7864
E4208117.301 REV B

UNIVERSAL ELECTRONICS

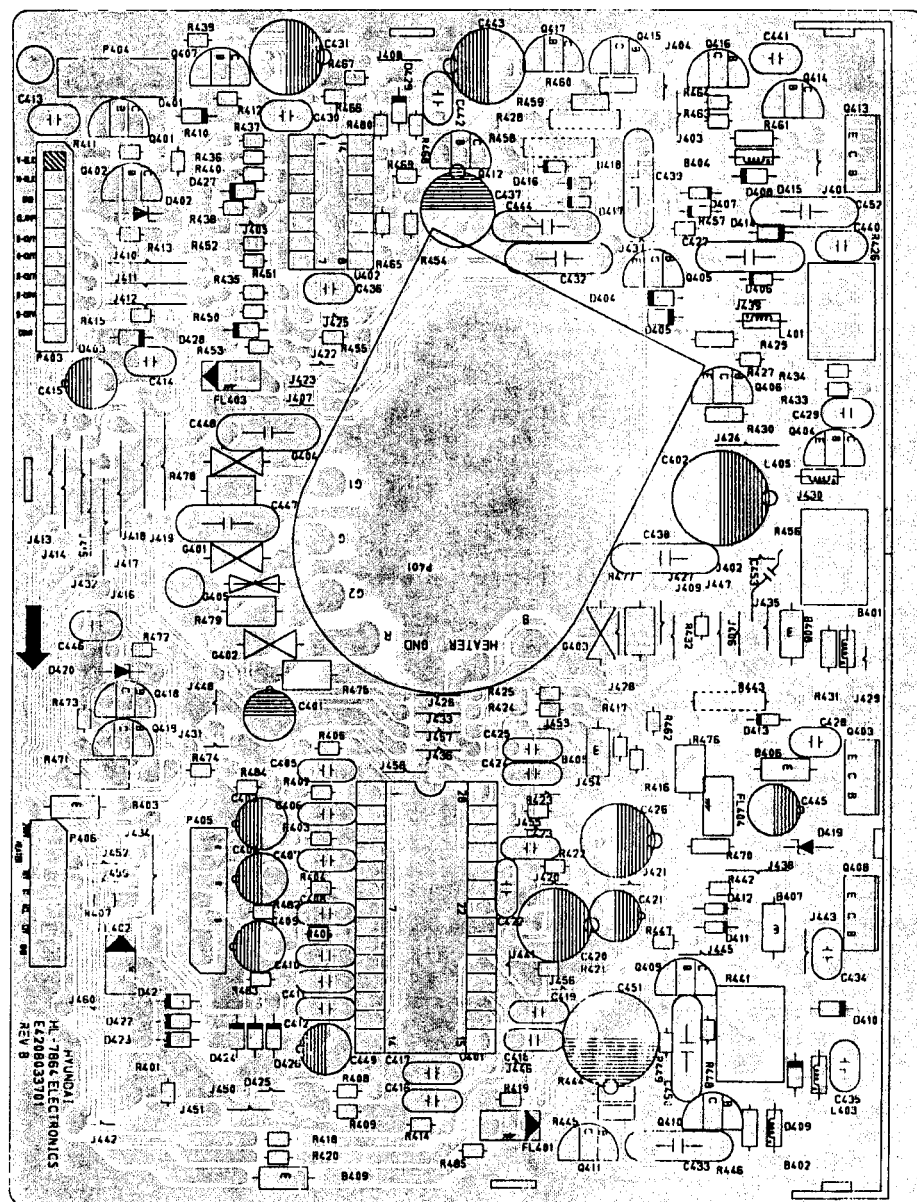
3-1 CTL COMPONENT



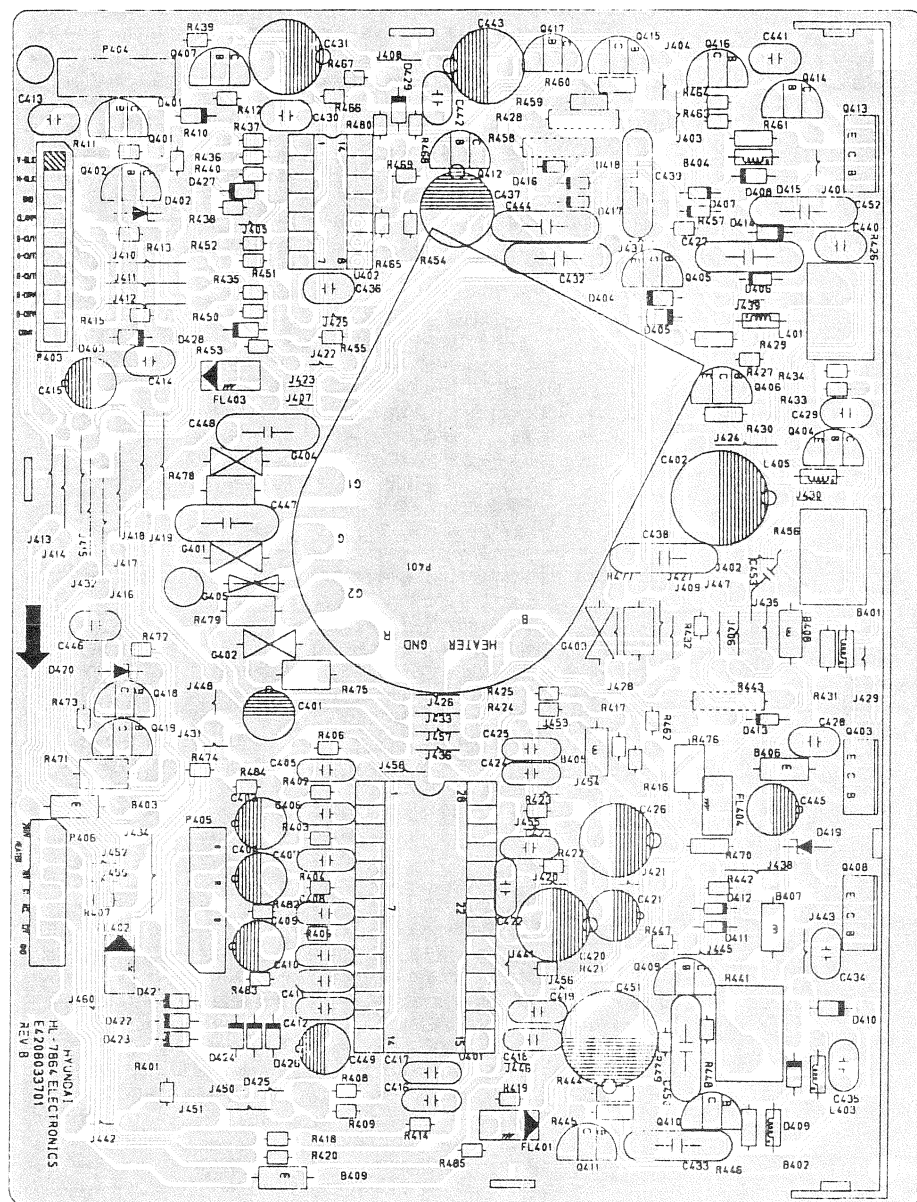
3-2 CTL SOLDER LAND



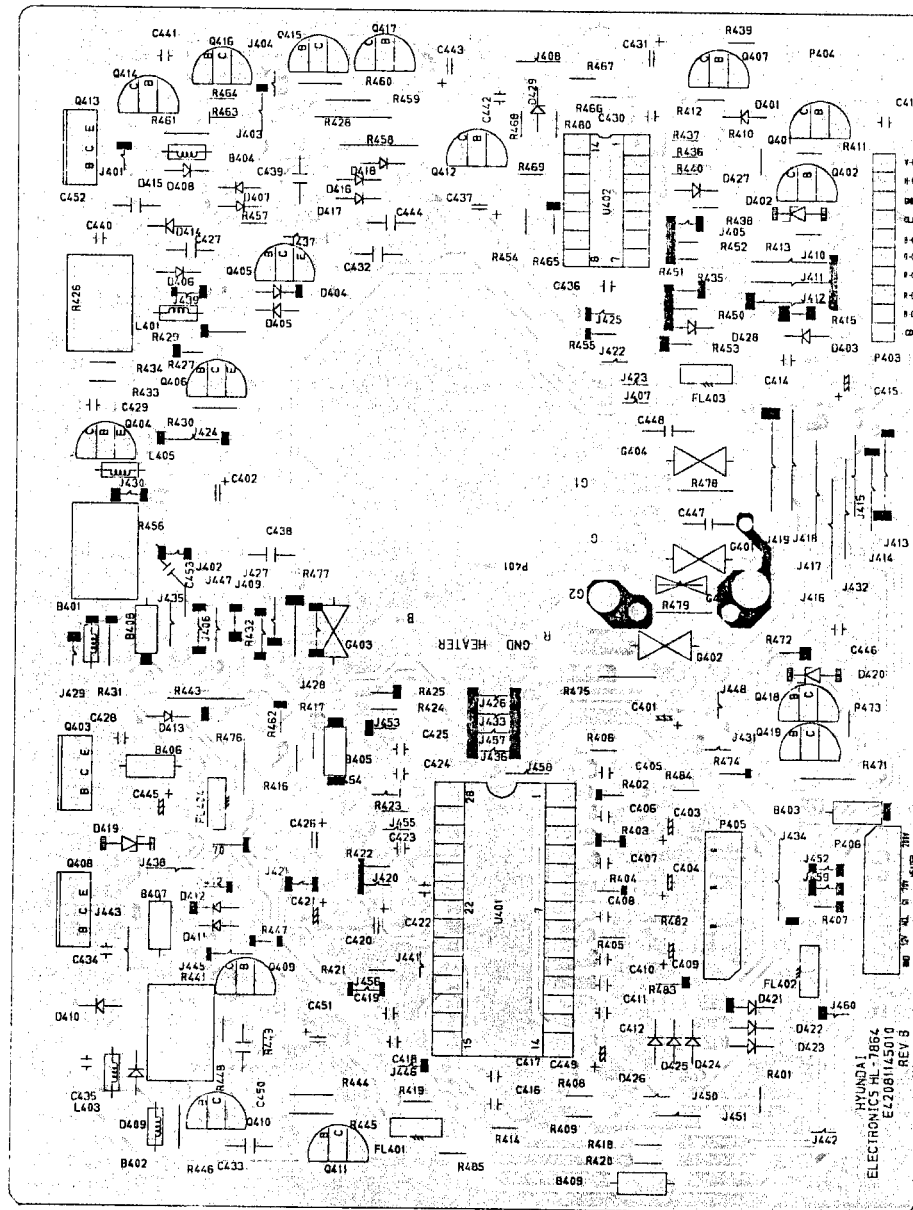
4-1 CRT COMPONENT



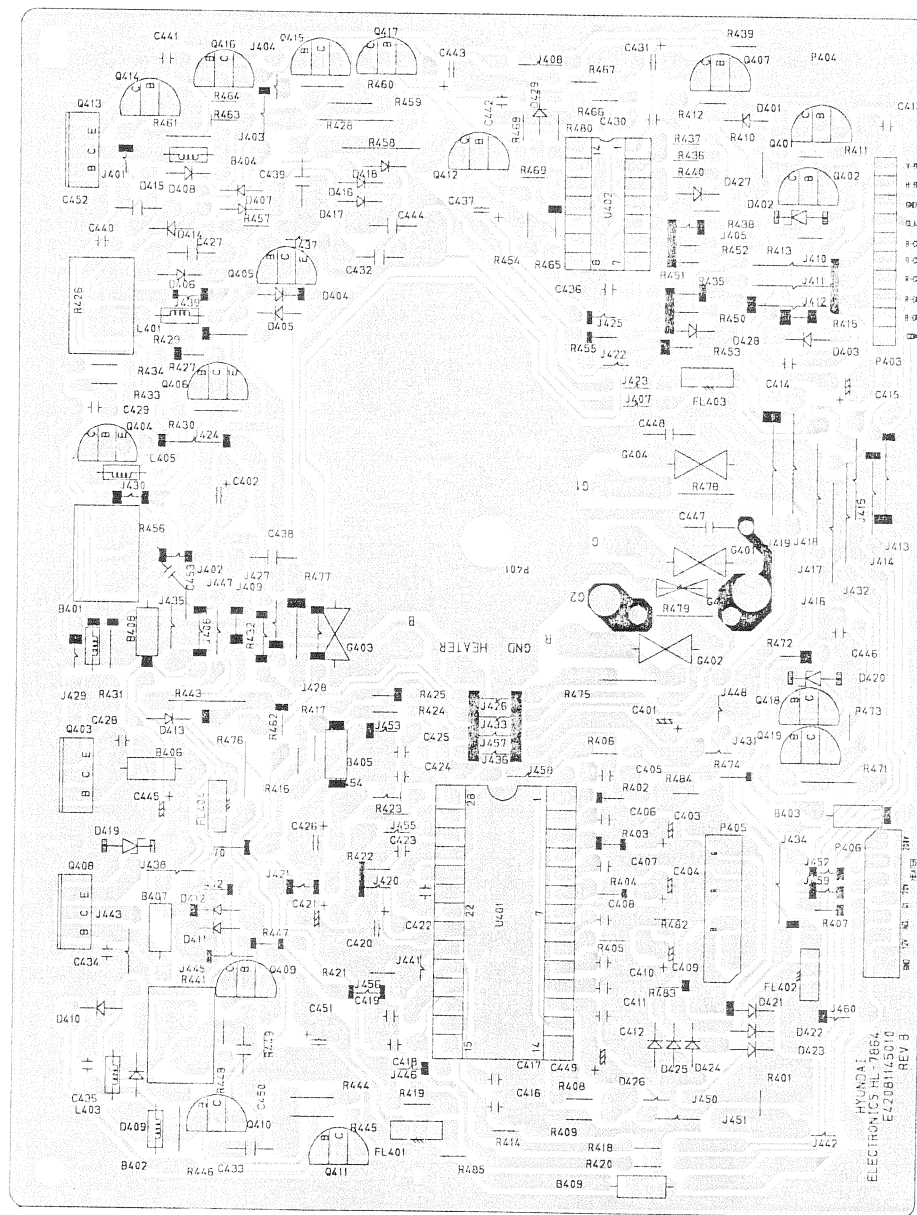
4-1 CRT COMPONENT



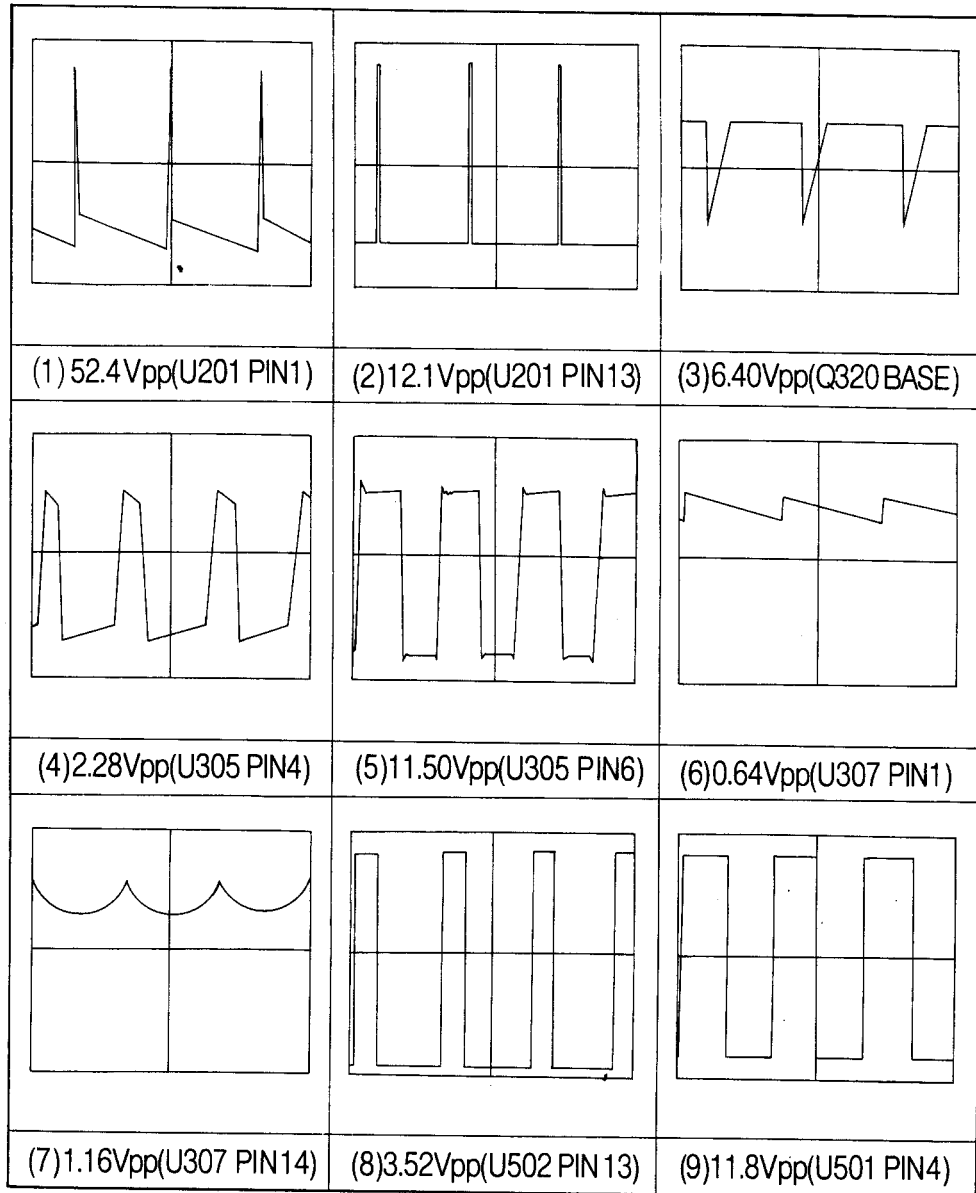
4-2 CRT SOLDER LAND

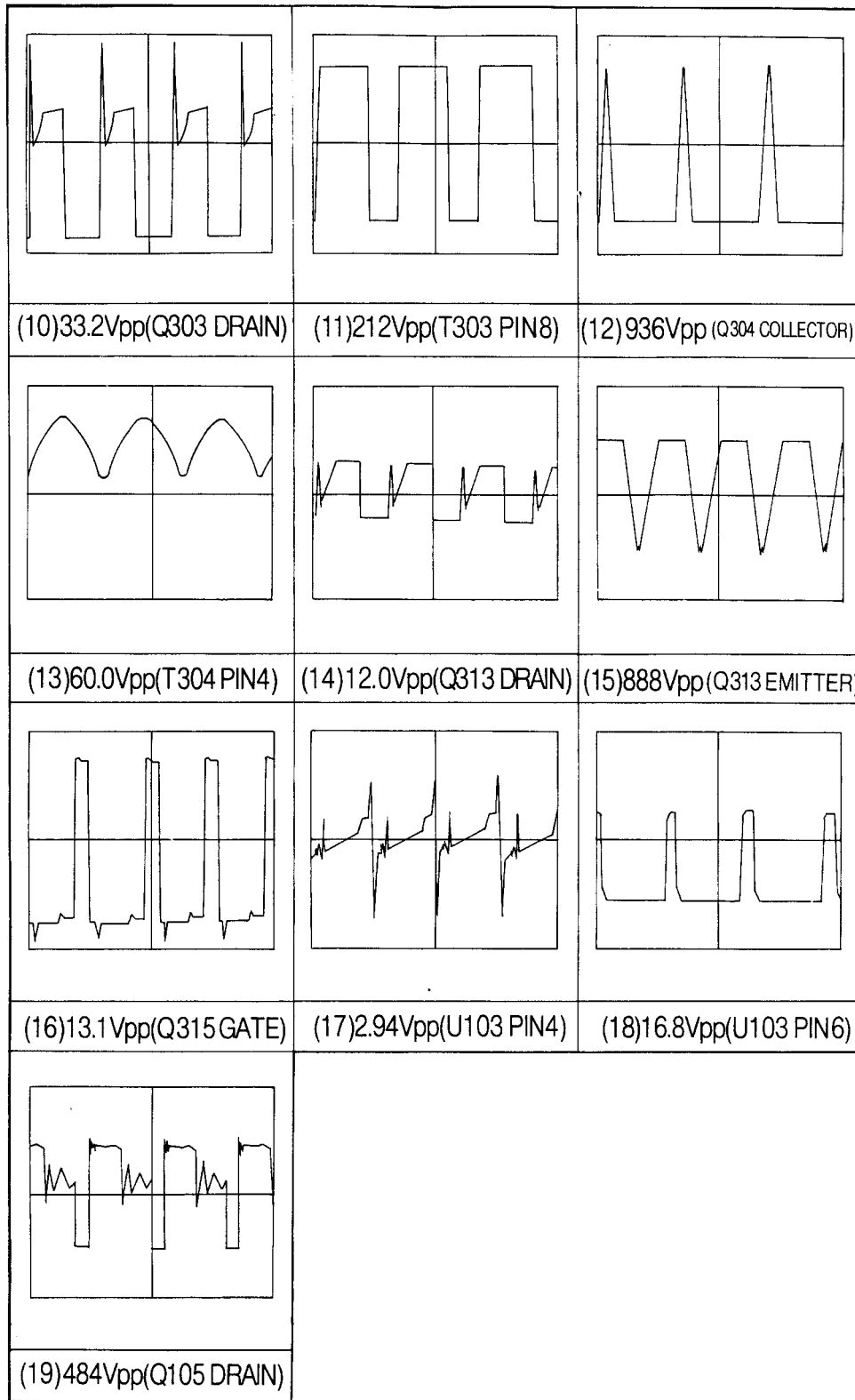


4-2 CRT SOLDER LAND



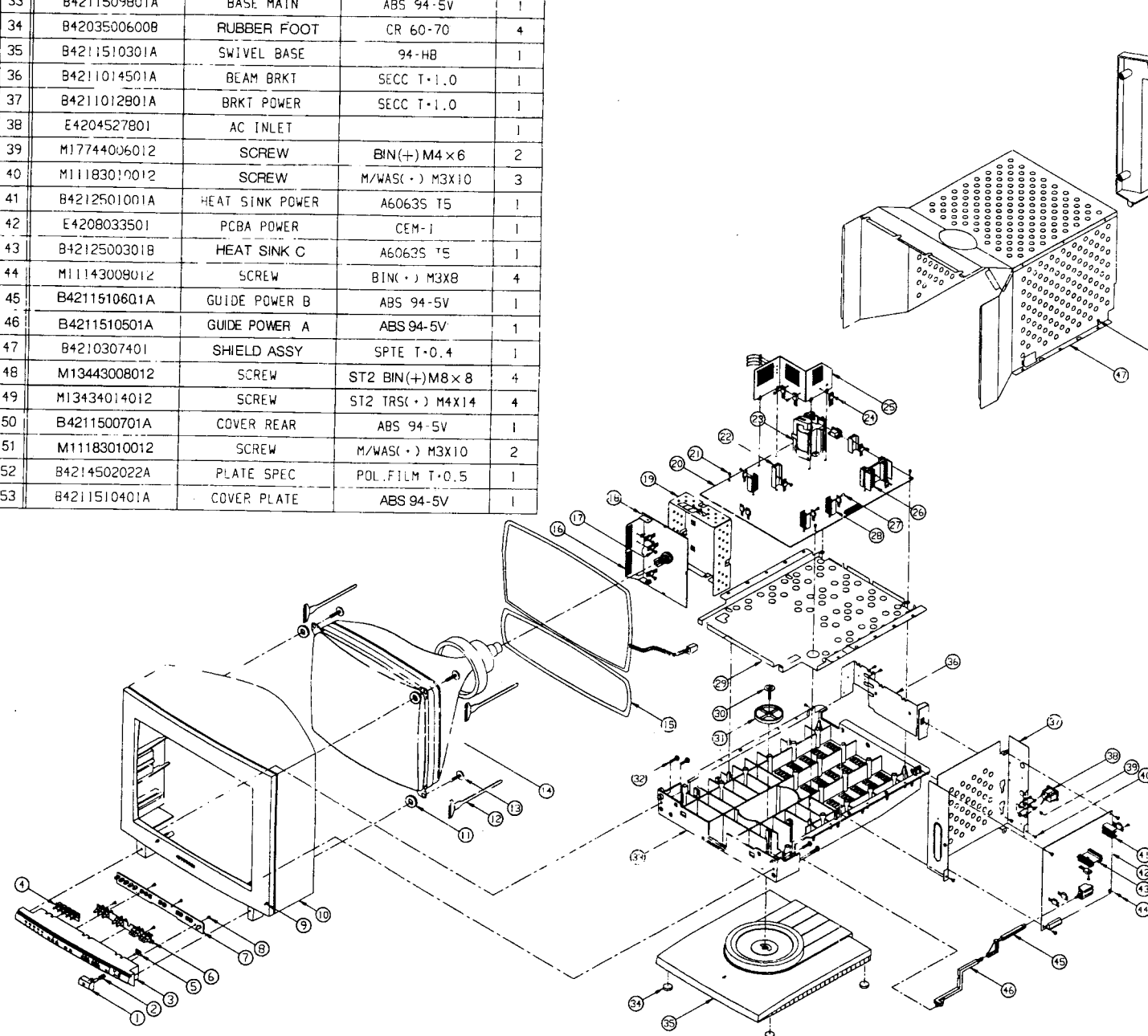
WAVE FORMS





EXPLODED VIEW AND SWIVEL

31	B4211506801A	SWIVEL PAD	NYLON 66	1
32	M13434014012	SCREW	ST2 TRS(+) M4X14	4
33	B4211509801A	BASE MAIN	ABS 94-5V	1
34	B4203500600B	RUBBER FOOT	CR 60-70	4
35	B4211510301A	SWIVEL BASE	94-HB	1
36	B4211014501A	BEAM BRKT	SECC T=1.0	1
37	B4211012801A	BRKT POWER	SECC T=1.0	1
38	E4204527801	AC INLET		1
39	M17744006012	SCREW	BIN(+) M4x6	2
40	M11183010012	SCREW	M/WAS(+) M3X10	3
41	B4212501001A	HEAT SINK POWER	A6063S T5	1
42	E4208033501	PCBA POWER	CEM-1	1
43	B4212500301B	HEAT SINK C	A6063S T5	1
44	M11143008012	SCREW	BIN(+) M3X8	4
45	B4211510601A	GUIDE POWER B	ABS 94-5V	1
46	B4211510501A	GUIDE POWER A	ABS 94-5V	1
47	B4210307401	SHIELD ASSY	SPT T=0.4	1
48	M13443008012	SCREW	ST2 BIN(+) M8x8	4
49	M13434014012	SCREW	ST2 TRS(+) M4X14	4
50	B4211500701A	COVER REAR	ABS 94-5V	1
51	M11183010012	SCREW	M/WAS(+) M3X10	2
52	B4214502022A	PLATE SPEC	POL.FILM T=0.5	1
53	B4211510401A	COVER PLATE	ABS 94-5V	1



30	B4208002300A	SCREW	ST2 TRS(+) M5X25	1
29	B4211014401A	SHIELD BASE	SPT T=0.4	1
28	B4212500102B	HEAT SINK A L:45	A6063S T5	4
27	M11143010012	SCREW	BIN(+) M3X10	7
26	B4212500901A	HEAT SINK VERTICAL	A6063S T5	1
25	B4210306802A	FE-SH-FBT ASSY	A1050P T=1.6	1
24	M13443010012	SCREW	ST2 BIN(+) M3X10	3
23	E42048058020	FBT		1
22	B4212500101B	HEAT SINK A L:62	A6063S T5	1
21	M13443008012	SCREW	ST2 BIN(+) M3X8	5
20	E4208033301	PCBA MAIN	CEM-1	1
19	B4210309101A	FE-SH-CRT ASSY	SPT T=0.3	1
18	E4208033701	PCBA VIDEO	FR-1	1
17	M13443008012	SCREW	ST2 BIN(+) M3X8	3
16	B4210309001A	HEAT SINK CRT ASSY	A1050PT=1.6	1
15	E42019111010	DEGAUSSING COIL		1
14	E4203304013H	CRT		1
13	B4208002300A	SCREW	ST2 TRS(+) M5x25	4
12	B4218500201C	RETAINER COIL	SECC T=0.4	4
11	B4213501201A	RUBBER CRT	CR 60-70	4
10	B4211509801A	COVER FRONT	ABS 94-5V	1
9	M13443010012	SCREW	ST2 BIN(+) M3X10	5
8	E42080334001	PCBA CONTROL	CEM-1	1
7	M13443008012	SCREW	ST2 BIN(+) M3X8	2
6	B4211512001A	CONTROL KNOB	ABS 94-5V	1
5	B4211510801A	LENS LED	ACRYLIC	1
4	B4211511901A	LENS CONTROL	ACRYLIC	1
3	B4211510001A	CONTROL BASE	ABS 94-5V	1
2	B4214000301A	SPRING COMP	SUS 304	1
1	B4211510701A	KNOB POWER	ABS 94-5V	1
NO	PART NO	PART NAME	DESCRIPTION	QTY

DATE	1995.02.28	DESIGNED BY	HONG IN HUA	CHECKED BY		APPROVED BY		UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN mm (INCHES): FRACTIONS ARE 16/100 (1/16) DECIMALS ARE 0.1 (1/10) DIMENSIONS ARE 0.1 (1/10) DIMENSIONS ARE 0.1 (1/10)	SCALE	1:1	TITLE	EXPLODED VIEW	REV	A
								SIZE	A2	DWG NO.	B42100035	THREE		